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Remarks
ON
BRONCHIECTASIS *

BY
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The subject of bronchiectasis is a suitable one for discussion at the Centenary Meeting of the British Medical Association, for this memorable date almost coincides with the centenary of the discovery of this condition. It was described for the first time in 1819 by Laennec in his great book *Auscultation Médiate* in a short chapter entitled "On dilatation of the bronchi."[1] Here Laennec described the morbid anatomy of four cases, and gave a brief account of the clinical history and of the physical signs during the fatal illness. For many years little was added to our knowledge of the subject, although there was much theorizing about the mechanism of bronchial dilatation.

In 1894 Clark, Hadley, and Chaplin[2] published a full account of forty-five cases. This was almost entirely a clinical study of living cases, as distinguished from the post-mortem study of Laennec. At this date it was now possible to separate accurately tuberculous from non-tuberculous disease of the lungs by the bacteriological examination of the sputum, so that in this large series of cases tuberculous disease as an aetiological factor in the condition was excluded. This non-tuberculous and chronic disease was termed "fibroid disease of the lung," although it was admitted that bronchiectasis was nearly always associated with the fibroid condition. Of the forty-five cases, one-half were under 15 years of age and nine under 10 years; but the clinical records showed that the symptoms of cough and spit had begun under 5 years in thirty-six of the cases.

In 1922 Sicard and Forestier[3] introduced the use of lipiodol injection into the trachea in combination with radiography, and so made it possible to verify and to give an exact demonstration of bronchial dilatation. This important advance was thus made in Paris just a hundred years after Laennec's discovery of the condition: it permitted a study of the morbid anatomy of bronchiectasis in the living subject with far more precision than by any other clinical method, and it may be described as the final diagnostic test of bronchiectasis. Findlay and Graham in 1927[4] published a study of twenty-three cases of bronchiectasis. Their communication was important in the number of the cases, in the fact that they were all in children and the condition was thus studied at a stage much nearer its commencement, in the verification of the diagnosis, and in the clinical demonstration of the different degrees and types of bronchial dilatation by lipiodol *x*-ray photographs.

During recent years the treatment of bronchiectasis, and, to a less extent, its diagnosis, have been approached in a new way by the perfection of the bronchoscope and by the use of bronchoscopic lavage. A variety of surgical procedures dealing with the condition by way of the pleura and lung have also been tried. There has thus been a revival of clinical study of bronchiectasis, and a trial of new methods of treatment. The moment is therefore opportune for a review of the subject.

CLINICAL FEATURES

The main outlines of the clinical picture are well defined. The condition begins in early childhood in the great majority of cases, and in most cases dates from an acute respiratory illness—bronchitis or pneumonia. Wherever a series of cases is recorded, the frequency of measles and whooping-cough or both, as the originating acute illness, is remarkable. After recovery from the acute illness the child continues to cough; and sooner or later the cough takes on characteristic features. It is paroxysmal, occurring in periodic bouts, which generally take place as soon as the child wakens in the morning, are violent, and often end in vomiting. They also occur during the day, after some exertion or excitement. Sputum is often copious, but may be scanty; in childhood it is generally not fetid, and is green or yellow according to the amount of pus present. From time to time there may be slight streaking of blood in the sputum; free haemoptysis is uncommon in childhood, but after some years, and in certain types, free and recurrent haemoptysis may occur, as described by Laennec and Clark, and recently by Pinchin and Morlock.[5] There may be intervals when the cough disappears entirely, but when the condition of bronchiectasis is established, this characteristic cough and expectoration are sure to return; the cough is coterminous with life.

The duration of life may be prolonged for many years, and remarkable cases of longevity are on record. The child is subject to exacerbations of this cough—acute febrile illnesses with bronchitis and pneumonia—and more often than not it survives these acute attacks. The general health, nutrition, and activity are surprisingly good, although there is a little dyspnoea. The general condition often varies with the amount of the sputum, improving and worsening as it diminishes or increases. In most cases there is some clubbing of the fingers and toes, and in nearly all, some degree of cyanosis; but extreme clubbing and cyanosis are uncommon.

The physical signs are much less constant, and much less reliable in diagnosis. They depend upon the amount of dilatation of the bronchi, upon the presence of sputum, and upon the amount of associated fibrosis of the lung tissue. The most constant sign is crepitation, persisting or recurring in the affected area; there is generally also a blowing breath sound of low pitch, and pectoriloquy in the vocal resonance. If massive fibrosis is present there will, of course, be percussion dullness; and if the pleura is thickened as well the breath sounds and their accompaniments may be scarcely audible. This feebleness of the breath sounds may also be present when the dilated bronchi are filled with secretion, and will be replaced by cavernous breathing when they are emptied by coughing. This variation in the auscultation signs in bronchiectasis is in itself significant.

The history and long course of the illness, the peculiar character of the cough and sputum, and the physical signs in the lung, together form a clinical syndrome which is unmistakable. There ought to be no difficulty in the diagnosis of bronchiectasis and in its differentiation from other clinical conditions in which cough is a prominent feature. The use of lipiodol is a further aid to diagnosis, and has given us a valid diagnostic test of bronchiectasis. More than that, in its accurate tracing of the extent and character of the bronchial dilatations it has established the existence of minor types of the condition.

DIFFERENTIAL DIAGNOSIS

Tuberculous disease of the lung in childhood, chronic bronchitis, and chronic cough produced by naso-pharyngeal catarrh are all conditions in which cough is a prominent symptom, and in which there may be difficulty in diagnosis. It is very common for cases of bronchiectasis to be regarded as tuberculous; but the long benign course and the absence of bacilli from the sputum in bronchiectasis makes distinction between the two conditions an easy matter.

* Paper read in opening a discussion in the Section of Diseases of Children at the Centenary Meeting of the British Medical Association, London, 1932.

There is more difficulty with those cases of chronic cough and bronchial catarrh following measles and whooping-cough or simple acute bronchitis and broncho-pneumonia. The cough may continue for years, and, in the cough and other clinical features, these cases may resemble true bronchiectasis. Agassiz and Gill[6] have described a large number of cases which they call "non-tuberculous fibrosis of the lung." Reading their careful record, one cannot doubt that they are describing a condition closely allied in pathology and clinical features to true bronchiectasis, and probably differing from it only in degree. So far lipiodol has not been used extensively in these cases, and it is quite likely that some will, by this method, show a minor degree of bronchiectasis. These cases are much more numerous than those of definite bronchiectasis. In them, too, there is organic bronchial damage and fibrosis, although without pronounced dilatation, and it is desirable that they should be grouped alongside true bronchiectasis and regarded as closely allied conditions. In younger children these cases of fibrous bronchitis may well be the early stage in the evolution of true bronchiectases, but in many instances definite bronchial dilatation does not seem to develop. The extended use of lipiodol may, however, alter our views on this point.

Another type of case is in the convalescent stage after a severe bronchopneumonia, and especially after whooping-cough and measles, where for some weeks there may be violent paroxysmal coughing and fairly copious sputum, and where a commencing bronchiectasis may be feared. Some of these cases probably have a dilatation of the bronchi which is temporary and which, after some months, gradually but entirely passes away.

Clinical Types of Bronchiectasis

Two types may be described. Where bronchiectasis is accompanied by massive fibrosis of the lung it is entirely or predominantly unilateral. These cases are the least common, but they are most easily recognized by the ordinary clinical methods. The use of lipiodol will demonstrate with precision the pattern of the bronchial tree and the extent of mediastinal displacement. Before lipiodol was introduced these unilateral cases perhaps formed the majority, and left-sided bronchiectasis was commoner than right-sided ; but they are actually less numerous than bilateral. On the whole, cases of unilateral bronchiectasis with massive fibrosis run a benign course, and are compatible with good nutrition and vigorous health: this is probably due to the collapse of the lung resulting from the fibroid contraction and to the absence of great bronchial dilatation and catarrh.

Bilateral bronchiectasis is the commoner type in childhood. Here the accompanying fibrosis of the lung is less, and the bronchial dilatations and the peribronchial fibrosis are usually confined to the bases of the lung and close to the vertebral column, so that the detection of this type by physical signs of percussion and auscultation is more difficult. Their demonstration by the use of lipiodol is very exact. The branches of the left bronchi are nearly always more affected than the right. In my own experience the more severe cases are found in this group ; the cough is worse, the sputum more copious, and the general condition of the child more unsatisfactory. At the same time the degree of dilatation varies much, and in this bilateral group there are also cases where the dilatation is slight, producing a uniform slight dilatation of the main bronchial branches without terminal sacculations: in these, although cough is troublesome, sputum is scanty and the general health may remain good. These more benign cases of bilateral bronchiectasis shade off into, and are not essentially different from, the numerous cases of chronic bronchitis with fibrous change in the bronchial walls and permanent damage, but in which no dilatation can be demonstrated by lipiodol.

Frequency of Bronchiectasis

When one considers the fact that most cases of bronchiectasis are due to infection and inflammation of the bronchial tracts and lungs, and also the huge aggregate of cases of bronchitis and pneumonia in this country, true bronchiectasis is a rare sequel of these diseases. It is very difficult to give an approximate estimate of its frequency. In the last 1,000 cases of medical diseases admitted into my hospital ward there were eight cases of bronchiectasis, verified by lipiodol *x*-ray photographs, and in eleven years of hospital practice I have records of thirty-one cases. This series of cases includes seven post-mortem examinations, in only one of which the condition had been observed or detected in life ; and in some of these it was at an early stage. Without attempting any statistical statement, it may be said that the condition, in its established form, is an uncommon one, either as a clinical disease or as a post-mortem finding.

Prognosis and Course

A remarkable feature of bronchiectasis is the contrast between the serious and extensive lesions in the lungs and the not unsatisfactory state of the general health. This fact is brought out in the clinical records from Laennec to the present time. The condition, even in advanced cases, is compatible not only with years of life, but with a fair degree of health and vigour and with the capacity to earn a living. Laennec's account of an old teacher of the piano, who died in his ward at l'Hôpital Necker aged 72, is the classical example of longevity in bronchiectasis. This old lady had been troubled since childhood with a cough and abundant expectoration, and with frequent haemorrhages, but she never considered herself sick and was always able to attend to her affairs. She was but a few days in hospital, and died of nothing but old age (cassée de vieillesse). Post-mortem examination showed extensive bronchiectasis of the right upper lobe, and to a much less extent in the left upper lobe.

It would be foolish to base prognosis upon one case. But there is also the series of forty-five cases of Clark, Hadley, and Chaplin. In these the average period of survival from the original illness was eleven years ; there were but three deaths, and the great majority were "not only alive but also in the enjoyment of excellent health." But it is still possible that many of the patients may die in childhood in the early stages of the disease. Findlay and Graham[7] have recently shown that a considerable number of patients did not survive childhood, and their view is that the general prognosis in childhood is grave. My own experience, derived from a study of thirty-one cases, many of which have been under observation for five years and more, is that most of the deaths take place within a year or two of the establishment of the condition. If the children survive this period of danger their chance of survival through the remainder of childhood is fairly good.

In my series of cases there were ten deaths ; five deaths occurred at or under 2 years, and in most of these the condition was at a very early stage of development. The principal causes of death were pneumonia and empyema ; indeed, of the known causes of death empyema was the commonest, and this complication also occurred in one of the non-fatal cases. Cerebral abscess did not occur in any. I have not found children with bronchiectasis to be specially susceptible to tuberculous infection, and my series of cases included several where the cutaneous tuberculin test was positive, and where, over a period of five years and more, no tuberculous disease has developed in the lungs or other parts.

Does "cure" of bronchiectasis ever take place when the condition has been established? This seems hardly likely, but cases are on record where great and apparently permanent amelioration of symptoms has occurred. Hutinel[8] has described several examples of this kind, but is careful to add that there remained a tendency to recurrent catarrhal and coughing attacks. In the process of bronchial dilatation there is a stage of development which varies in length from a few weeks to a few months. It is in this stage that treatment might be expected, not to restore the integrity of the bronchial walls, but to prevent the further evolution of the process.

Some writers speak of a "progressive worsening of the condition" extending over years, both of the bronchial dilatation and of spread of the fibrosis. I have not seen this happen in my cases: stabilization of the process had occurred when they came under my observation, and, over periods of observation up to eleven years, there was no appreciable organic change in either the lungs or the bronchi. In one boy with extensive unilateral bronchiectasis of the right lung no physical change could be observed over a period of eleven years: he came under observation at the age of 1½.

In the acute and convalescent stages of severe bronchitis and of bronchopneumonia, and especially in whooping-cough and measles, an acute dilatation of bronchi may take place. This need not be a permanent condition if the bronchial walls are only stretched without destructive lesions in their walls. The term "bronchiectasis" should not be used to describe this temporary stretching, which is found often enough at post-mortem examination of fatal cases; it should be reserved for cases of permanent structural damage of the bronchial walls.

The Pathological Process in Bronchiectasis

All cases of bronchiectasis do not begin in childhood, but it is probable that the great majority do. The older clinical and post-mortem records of the condition in adolescent and adult life establish beyond doubt its commonest origin in early childhood, and they give valuable hints as to the general nature of the originating illness. Recent careful clinical studies of the condition in the child confirm these observations. In most cases this originating illness is a definite and severe attack of bronchitis and bronchopneumonia, and in all large series of cases measles and whooping-cough easily take first place, although instances of bronchiectasis following simple bronchitis and pneumonia are common enough. The characteristic and persistent cough begins soon after recovery from such an illness. In a few cases it begins more insidiously, without an antecedent definite attack of bronchitis or pneumonia, and in this much smaller group the cough may even begin in the first year of life. The aspiration of foreign bodies, of food material, of pus and blood from septic or operation areas in the throat and nose, account for a few cases, but in the aggregate they form a very small fraction of the whole. In my own series there was one case almost certainly due to the aspiration of a foreign body. I have not met with a case that followed pleurisy or empyema.

All these types of originating illness consist of, and begin with, bronchial catarrh and inflammation. It may be accepted that the largest number of cases are the sequel of acute bronchitis and bronchopneumonia, and especially when associated with measles and whooping-cough. But it is a curious and striking fact that, although these diseases in their severest forms are very numerous in hospital practice and under close observation, bronchiectasis is seldom detected there in its earliest stage. The symptoms of the condition thus do not seem to start "at full blast": there appears to be a stage of evolution when the characteristic violent periodic cough and sputum are not developed, although the pathological condition of bronchiectasis may already be present.

Although bronchiectasis is seldom discovered clinically in its earliest stage, there are occasional opportunities of studying the pathological process in early fatal cases. With my colleagues Dr. Agnes Macgregor and Dr. W. A. Alexander[9] I have examined five early fatal cases. In all of them the primary change was ulceration, suppuration, and complete destruction of the original bronchial walls, then the replacement of these walls by organizing granulation tissue and by a cubical and non-ciliated epithelium; in these areas the lumina of the bronchi were converted into irregular spaces, and bronchiectasis was already present. Adjoining these destroyed and reconstituted bronchial walls young fibrous tissue was infiltrating the lung.

These findings have a bearing on the old controversy as to the mechanism of bronchiectasis. They give no support to Corrigan's theory, still widely held, that bronchiectasis is produced by traction upon the bronchial walls by fibroid change in the lung itself. They show that the primary change in early bronchiectasis as seen post mortem is an intense inflammation of the bronchi which destroys their walls. Before death these cases showed the symptoms of troublesome cough and sputum, but not the characteristic cough and copious sputum of bronchiectasis. It is easy to imagine what the further developments would have been. These re-formed and weak bronchial walls had lost their ciliated epithelium, their muscular coats, and their cartilages. Secretions would accumulate within them, and, in coughing, would be expelled with difficulty, and would further distend the weakened walls. Sooner or later the clinical features would emerge. But in this pathological process fibrosis of the lung would seem to play only a minor part.

In this group of fatal cases showing bronchiectasis in its early stage of evolution the primary pathological process was shown to be a suppurative and ulcerative bronchitis, which destroyed the bronchial walls. This seems to indicate that in all cases of bronchiectasis which begin with bronchitis the primary and essential change is in the bronchial wall, either an acute destructive inflammation or a more chronic weakening and disintegration.

Treatment

In bronchiectasis we are dealing with several morbid conditions—bronchial catarrh, the retention of secretions in the bronchial dilatations, and fibroid change in the bronchi and adjoining lungs. The fibroid change is an incurable condition, but it is also rather a help than a hindrance in limiting bronchial dilatation.

In our treatment we cannot hope to do more than reduce the size of the cavities and procure a regular emptying of their contents; in actual practice we can seldom achieve so much. These two objects may be attempted by medical and hygienic measures alone, or by adding to them more radical and surgical procedures. I hope that the discussion will draw out information regarding a variety of recent radical procedures. So far the medical treatment of bronchiectasis must be described as ineffective. In most cases it has only achieved an amelioration of the symptoms, and its comparative failure has encouraged and justified the trial of bolder measures.

Of medical measures the most effective is daily postural drainage, the child lying on its face on a steep inclined plane for at least half an hour once or twice a day, and continuing to do so until there is marked reduction in the quantity of sputum. I have also obtained some help from regular spraying of the nose and throat with glycerin solutions; this aids expectoration and prevents the reinfection of the bronchial surfaces from infected nasal and throat

secretions. Among the expectorants, belladonna and potassium iodide sometimes help a little. Inhalations may also help in aiding expectoration, but in my experience have not done more than that. Vaccines have been quite ineffective in my hands. In addition, the institution of good hygiene, open-air conditions, prolonged rest, and simple respiratory and gymnastic exercises are of real value in promoting good nutrition, and in maintaining the general health at a high level. Most cases of bronchiectasis respond quickly to such measures in hospital ; weight increases, while cough and sputum greatly diminish. When, however, the child returns home the symptoms soon reappear. It is probable that better results could be obtained by far more prolonged treatment on the above lines, especially if such treatment could be begun and continued at an early stage in the bronchiectatic condition.

So far the published results of bronchoscopic lavage and of the great variety of chirurgical treatments by way of the pleura and lung are not encouraging. The more drastic procedures which extirpate the affected area of lung are attended with a high mortality. Those that aim at producing collapse of one lung are confined to the unilateral cases, which are often of benign type with a fair standard of general health ahd a good enough expectation of life, and in which the existing fibroid change makes further collapse difficult to attain. Bronchoscopic lavage is a safer and a more radical treatment ; it is a direct attack on the real therapeutic problem of the dilated bronchi and their retained and septic contents. Its immediate results in older cases are often very good indeed, but there are difficulties in the frequent use of the bronchoscope in young children. We may hope that with improvement in the technique of the bronchoscope a real advance in the treatment of bronchiectasis will be achieved.

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RECENT RESEARCH ON THE SEX HORMONES AND THEIR CYCLICAL PRODUCTION*

BY

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The gonads differ from the other endocrine organs (with the possible exception of the pituitary) in that their functional activities are cyclical. With such glands as the suprarenal and the thyroid the same chemical substances (adrenaline or thyroxine) are produced continuously or at any rate without any marked periodicity dependent upon inherent or seasonal rhythm, but with the testes and ovaries the hormones secreted vary in character or amount with the different phases of sexual activity. This fact has often been lost sight of in seeking to apply endocrine therapy to cases of abnormality of sexual or reproductive function, and has led to the use of extracts obtained from the sexual glands in cases which are entirely inappropriate for the treatment employed.

* Read in opening a discussion in the Section of Physiology and Biochemistry at the Centenary Meeting of the British Medical Association, London, 1932.

The Testicular Hormone

So far as is known there is only one testicular hormone which in the lower vertebrates is presumably elaborated in amounts varying with the degree of sexual activity. In the domestic animals, most of whose males are able to breed all or nearly all the year, the hormone must supposedly be produced at all times, and for the purpose of preparing an active extract it is immaterial at what season the testes are obtained, provided that they are sufficiently developed. Moreover, there is a well-founded presumption that the testicular hormone is elaborated from the embryonic phase onwards, and that it is responsible for the development of the secondary male characters. The hormone, which is now called " proviron," has recently been obtained in crystalline forms as an oxyketone with the empirical formula $C_{16}H_{26}O_2$ (Butenandt, Schoeller, etc.). Its strength has been standardized according to its potency in promoting comb growth in castrated fowls. Its use is indicated in cases of known testicular deficiency, such as bilateral orchidectomy, and possibly also in cases of senility (whether premature or otherwise) and cryptorchism associated with arrested sexual development. In assuming the existence of proviron, physiologists are now on firm ground, and it is only a matter of time to establish its importance in appropriate cases of testicular deficiency.

Endocrine Functions of Ovary

In dealing with the endocrine functions of the ovaries the matter is complicated by the fact that these organs elaborate two or possibly three or more hormones, which vary in amount at different stages of the oestrous or sexual cycle. There is probably a hormone produced from the embryonic period onwards which is responsible for the growth of the female characters and possibly also for their maintenance from puberty until the menopause. This, however, is still problematical. It is, nevertheless, certain that the ovary produces a secretion responsible for the induction of " heat " (pro-oestrum and oestrus), and another which is an essential factor for promoting and maintaining the raised uterine nutrition and associated changes in the sexual organs during pregnancy and at certain comparable periods in the absence of pregnancy.

In order to understand the parts played by these hormones and their relation to the changes which take place periodically in the different phases of the sexual cycle, it is desirable to make a comparative study of the homology of these changes in different types of mammals. The want of such study in the past has led to strangely contradictory conclusions expressed with considerable degrees of dogmatism on the part of writers of textbooks as well as of actual investigators who have limited their studies to man or to a particular group of animals. Thus, taking two textbooks of physiology in constant use among students, we read in one that the oestrus-inducing hormone when injected into women has been shown to induce menstruation (a statement which when it was made was at any rate premature), and in another the completely contradictory statement that this hormone did not induce menstruation, and that " it was unlikely it ever would." It need hardly be added that these two statements are based on contrary views as to the nature of the menstrual process and its homologues in the lower animals. So also we find Fraenkel identifying the ovarian hormone with the secretion produced by the corpus luteum, which he regarded as the ovarian endocrine organ *par excellence*, that was always present though reappearing at different times in different positions ; and on the other hand Edgar Allen apparently holding the view that the secretion formed by the follicle was the same as the ovarian internal secretion. Instances of this sort of contradictory conclusion might be multiplied many times. That they have

gravely hampered clinical application and progress in treatment can hardly be doubted. It is obvious then that before we are in a position to practise an effective ovarian therapy it is essential to have reached sound conclusions regarding the nature of the successive phases of sexual activity and the endocrine factors which contribute to their occurrence.

OESTROUS CYCLE IN ANIMALS AND HUMAN BEINGS

The simplest type of oestrous cycle is that shown by the dog, an animal which is monoestrous and has one heat period in the sexual season:

1. There is an *anoestrum*, or period of rest, lasting about three months.

2. There is a *pro-oestrum*, or time of " coming on heat " (about ten days), with a stage of growth and increased vascularity, followed by a stage of destruction, with uterine haemorrhage and bleeding, first into the uterine cavity and then at the exterior. (The destruction of uterine tissue is usually very slight and limited to points on the epithelial surface where bleeding was actually taking place ; Evans and Cole, in their recent monograph, however, could find no evidence of destruction of tissue, though they admit the existence of a well-marked pro-oestrum).

3. *Oestrus*, or the period of desire, follows and ovulation spontaneously takes place (according to Evans and Cole near the beginning of the period). Bleeding ceases and the congestion and oedema in the uterus disappear. This period lasts about a week.

4. Oestrus is followed by *pregnancy* or *pseudo-pregnancy*, according to whether or not the ova are fertilized. Both are associated with the development and activity of the corpus luteum, and great glandular hypertrophy takes place in the uterus. Towards the end of pseudo-pregnancy degenerative changes take place, and there is extravasation of blood in the uterine mucous membrane but no bleeding at the vulva. Both pregnancy and pseudo-pregnancy in the bitch last about two months, but according to Evans and Cole pseudo-pregnant conditions may go on for longer. The whole cycle takes about six months on an average.

A second type of sexual periodicity is shown by the rabbit and ferret. These have a long anoestrum followed by a pro-oestrum, during which the follicles ripen. The pro-oestrum is followed by oestrus, which may extend over many weeks, during all of which time the female is ready to receive the male. Ovulation does not take place except after coitus, and is then normally followed by pregnancy. During oestrus there is a continuous follicular stage throughout which the follicles are ready to rupture. In the ferret, more especially, this is marked externally by an enormous swelling of the vulva. With the onset of the luteal stage the vulva rapidly subsides. Pseudo-pregnancy only occurs in these animals under experimental conditions, as after a sterile coitus.

In the primates (man and monkeys), as well as in most of the domestic animals, the condition is one of poly-oestrum or a succession of short cycles, each of which in man is a menstrual cycle. There may, or may not, also be an anoestrum. The succession of events has recently been worked out on monkeys and baboons by Corner and W. M. Allen, by Hartman, and by Parkes and Zuckerman. Before menstruation there is a well-marked growth period, followed, as is well known, by destruction, as manifested in the menstrual discharge. Ovulation does not take place until about a week after menstruation is over—about the fourteenth day after the beginning of menstruation. There is a pronounced " follicular stage," to use Loeb's term, as has been recently described for the baboon, extending until ovulation takes place. The swelling then subsides in much the same way as the swelling of the vulva in the ferret. With the formation of the corpus luteum there commences what may be described as an abbreviated pseudo-pregnancy, which terminates by the beginning of the next menstrual period. As shown, however, both by Corner and by Parkes and Zuckerman, ovulation does not always occur during the cycle, in which case the corpus luteum is not formed. Nevertheless, as these investigators have shown, menstruation occurs out of a uterine mucous membrane which has not been built up during an abbreviated pseudo-pregnancy.

It would appear, therefore, that in the primate menstrual cycle destruction may represent either pro-oestrous degeneration alone or, as is more usual, pseudo-pregnant degeneration plus pro-oestrous destruction, the two processes in this case being telescoped into one another. However this may be, it is quite clear that there is in the primate a " follicular phase " prior to ovulation, and usually a "luteal phase" succeeding it. According to Hartman the pro-oestrum in the bitch is the homologue of the mid-menstrual bleeding, which has been described in human beings as occurring about the time of ovulation. It should be stated that there is in most, if not in all, mammals, a vaginal cycle occurring in association with the uterine cycle, and that the cornification of the vaginal epithelium is regarded as a criterion for oestrus.

USE OF EXTRACTS IN DISEASE

It is only in very recent years that any attempt has been made to treat ovarian therapy scientifically. Nevertheless ovarian extracts administered in various ways in one form or another have been employed medically for some thirty or more years. Most (in fact, practically all) of these extracts are now known to have been completely inactive, or even if there were evidence of an active substance being present, it has been administered in such a way that the active principle was destroyed before it could be of any use. The only underlying scientific basis for such methods of treatment has been the fact that the ovary is an organ of internal secretion. In view of this, it seems to have been argued, the employment of ovarian extracts may be useful in every conceivable kind of sexual disorder in the female sex. Even now, when some of the ovarian secretions have been isolated and their action worked out scientifically upon the lower animals, the clinical position is hardly better. The incorrigible tendency, fostered by certain manufacturers and exploiters of commercial products, to use ovarian extracts almost at random in cases of any sort of sexual derangement, is still doing much to discredit their possible utility and to hamper the advance of what should eventually become an important branch of applied endocrinology.

Identity of Ovarian Hormone

The active ovarian substance found to induce heat in oöphorectomized rats was made by Allen and Doisy from the liquor folliculi, and called " folliculin." It was afterwards obtained also from the interfollicular tissue and then from the placenta. The discovery of Zondek and Aschheim that a substance with the same physiological properties could be obtained from the urine of pregnant women and pregnant mares has led to a cheap and easily available supply being forthcoming, and the substance has been independently produced in crystalline form in four different centres. It has been variously called " folliculin " (Allen and Doisy), as already mentioned, " oestrin " (Parkes), " progynon " (Butenandt), " menformon " (Laqueur), " theelin " (Veler, Thayer, and Doisy), and the " α-hormone " (Wiesner). Marrian and others have obtained two active substances of known composition: ketohydroxyoestrin ($C_{18}H_{22}O_2$) and trioxyoestrin ($C_{18}H_{24}O_3$). Butenandt has shown that the former is 5.3 times more active than trioxyoestrin. He suggests

that ketohydroxyoestrin is the actual oestrus-producing hormone elaborated by the ovary, and that prior to excretion in the urine it is converted to trioxyoestrin in order to increase its water solubility. There seems good reason to suppose that the ovary is the ultimate source of both.

Considering a " mouse unit " of oestrin as what is necessary to cause vaginal cornification in that animal, 60,000 to 80,000 such units are required to produce full sexual skin swelling in the baboon. The reaction threshold of the vagina in the mouse is much less than that of the uterus (400 more units being required for the latter and in order to bring about copulation). Oestrin also causes extensive growth, etc., in the uterus and vagina of the baboon or monkey, but never full pre-menstrual growth. This can only be induced in the oöphorectomized monkey by the additional administration of corpus luteum extract (Hisaw, Fevold, and Meyer).

Corpus Luteum

That the corpus luteum produces an internal secretion which is an essential factor in maintaining the raised nutrition of the uterus during pregnancy, besides promoting mammary growth in preparation for milk secretion, has long been known. The final and confirmatory proof has been supplied by Corner, who, by injecting luteal extract daily into rabbits oöphorectomized eighteen hours after the fertilization of the ova, has succeeded in maintaining the pregnancy for the normal time. This experimental result has been confirmed and extended by other investigators. Corner has called the active principle " progestin." It seems certain that progestin is elaborated by the ovary during the " luteal phase " of the ovarian cycle whether pregnancy occurs or not.

Mention must also be made of the suggestive results of G. van S. and O. W. Smith, who found that progestin caused the excretion of injected oestrin in rabbits. Observations in women also showed that oestrin is excreted only when the organism has been exposed to the action of the corpus luteum.

Clinical Limitations

The above statements give a brief summary of the principal known facts concerning the hormones produced by the ovary and their modes of action. It will be seen that clinical applications must at present, at any rate, be strictly limited in scope. The use of oestrin is only indicated in cases where there is evidence of a natural deficiency of this substance as with certain types of amenorrhoea, or after ovarian extirpation, and, much more problematically, at the time of the menopause. The indiscriminate usage of oestrin for other disorders has no basis in physiological fact, and may justly be stigmatized as quackery. In a similar way the use of progestin may only at present be reasonably justified in cases where there is evidence of a deficiency of this hormone, if indeed this ever occurs. Such deficiency may conceivably be an occasional cause of abortion, but, as far as I am aware, there is no direct proof of this ever happening. The possibility that these two hormones (oestrin and progestin) may be used to regulate the cycle in the domestic animals for economic purposes lies in the future.

Ovaries and Pituitary Body

The work of P. E. Smith and Engle and Zondek and Aschheim, which has been confirmed and extended by other investigators, has shown that the anterior lobe of the pituitary produces two sex hormones, one of which is oestrogenic and the other lutealizing. The oestrogenic hormone also acts on the male organs. These represent the " Rho factors " of Wiesner. Moreover, Bellerby and others have prepared an extract of anterior lobe which when injected into an oestrous rabbit will cause ovulation in from eleven to twelve hours. A growth hormone from the anterior lobe has also been obtained by Evans and others. The precise way in which the two ovarian hormones (oestrin and progestin) and the anterior pituitary hormones act and react upon one another is not yet clear, but it is certain that a functional correlation exists. Just as the gonads are inactive in the absence of the anterior lobe, so the latter organ is incapable of promoting sexual changes in the absence of the gonads. Clinical applications of the principles involved are probably premature until the extracts have been further tested on animals.

In conclusion, reference may be made to the important work of Knaus, who has demonstrated the existence of a physiological antagonism between the internal secretion of the posterior lobe of the pituitary and that of the corpus luteum. As a result of this work strong evidence is obtained that the action of the posterior lobe secretion in causing uterine contraction is inhibited during pregnancy, in the way postulated by Dixon and the present writer, and consequently that the regression of the corpus luteum is one of the main factors in bringing about parturition, as had already been supposed (Marshall). Further, Illingworth and Robson have claimed as a result of experimental work that the luteal hormone involved in this mechanism can be discriminated from the progestational hormone of Corner.

It must be mentioned, however, that recent work by Allan and Wiles has shown that the progress of gestation and parturition in the cat may take place in the complete absence of the pituitary (removed some days before). This does not necessarily mean that the pituitary does not normally play a part both in pregnancy and delivery, and it may be pointed out that, as shown long ago by Goltz and others, parturition may proceed in the dog in the absence of the dorso-lumbar part of the spinal cord, although normally the nervous system is a factor in the process. In such cases some compensatory mechanism may very possibly be at work.

MENTAL HEALTH IN RELATION TO EDUCATION*

BY

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The relation of the teaching to the medical profession may be considered in three phases. The first lasted roughly up to the beginning of this century ; during that phase the doctor was to the schoolmaster the man who attended cases of sickness. In the second phase he was called upon to advise on measures of physical prophylaxis ; such questions as ventilation, diet, physical exercise, and notably the prophylaxis of epidemics, were submitted to him. This advance was largely due to the Board of Education, and affected State schools much more than it did the schools which we designate as " Private " and " Public." Indeed there are grounds for suspecting that in these last two categories schools still exist in which the doctor's function is limited to the first phase. But in general it may be said that schools having little or no supervision by the Government are following, if in somewhat laggard fashion, the obvious line of advance.

The third phase is, or rather should be, that in which the physician is regarded as a health officer in every sense of the word, and, as such, guardian not only of the pupils'

* Read in opening a discussion in the Section of Mental Disorder at the Centenary Meeting of the British Medical Association, London, 1932.

physical well-being, but also of their mental health. That phase is still a conceptual one, unless we may take the fact of to-day's discussion as evidence that it has materialized. But however obvious it may be to us that such a state of affairs is desirable, the facts do not give us much ground for hopefulness. Indeed, the truth of the matter is that, in so far as medical training goes, the doctor is less qualified than the teacher to cope with mental hygiene.

School teachers—I refer to those who hold teaching certificates—have at least had some training in psychology, whereas we doctors have not. Any knowledge of the subject that the school medical officer may possess he has acquired since graduation. It follows, therefore, that in dealing with such problems as persistent stealing or homosexuality the teacher is more likely than the doctor to have insight into the motivation, and in consequence is less likely to treat the incident on the purely objective plane of social delinquency. It is true that in some of our boarding schools for boys, including certain very ancient foundations, there is no such advantage on either side, as neither master nor doctor has any psychological insight beyond that which may come to him by the light of nature. The situation is one which entirely satisfies the complacency of our racial traditionalism. It is not one, however, that can be regarded as satisfactory in the light of modern knowledge and of educational ideals outside these islands.

Let us examine the situation more closely in order to establish as far as possible the claims of mental hygiene in the school. For the majority of the population we may take the school age as being 5 to 14 ; for an inconsiderable but important minority it is 5 to 18. During these years certain adaptations are continuously in progress ; they are physiological, intellectual, and emotional.

Growth and Sex Development

The physiological adaptations are, first, growth, and secondly, sex development, the two being intimately associated. As soon as we consider the first—growth—we realize one of the difficulties of standardized education. Our State education, as in every other country, is necessarily a mass system, but all other education, private and "public," has up to recent years taken standardization as an ideal to be aimed at. The pupil had to adjust to school life, and in the process he was to find himself. It is clear that such a system, however excellent for the normal boy and girl, does make excessive demands upon those who are in any way freaks. In the matter of stature, for instance, little imagination is needed to realize how much extra hardship is involved for the giant and the dwarf. The one has to curl up in a bed too short for him ; the other has to write at a desk which necessitates a contorted position, and so on.

I suggest that the ideal of standardization has been overworked. I believe that for normal, average, or standard material there is a great moral and psychological benefit in being treated exactly like one's neighbour and in having to adjust to the school instead of expecting the school to adjust to one's own demands. But with the "freak" child it is not so. I recall a boy in my own class at school who was 6 ft. 4 in. when he reached the age of 14. I cannot help thinking that his education would have been pleasanter, and perhaps even more profitable, if he had been at a school where he was not the only one who did not play football, where, in fact, there were other freaks to keep him company—not necessarily giants like himself—in short, at an individualistic school. Such schools are on the increase ; they are a product of this generation. It is to be hoped that they will fulfil their function toward the abnormal child, and that they will not seriously interfere with the much more important function of the standardized school for the child of standard equipment.

In estimating the effects of the growth factor we must realize that as the overgrown adolescent may be physically languid and easily fatigued, so his intellectual capacity is necessarily handicapped ; his powers of concentration are not what they would have been with only a normal growth factor. He, and still more the overgrown adolescent girl, may require longer hours of sleep, or a midday rest in excess of what is necessary or provided for others of the same age.

Sex development, as we know, is intimately associated with growth. The most abnormal class here is perhaps the abnormal pituitary group in which long bone development is associated with sexual retardation or infantilism, and the Fröhlich group in which excessive fat is associated with genital arrest. Then there are the adrenal dwarfs—generally unrecognized in modified degree—with an excess of dark hair, precocious genital development, and diminutive stature. I mention these three groups to show that there are both physical and psychological implications, and, that being the case, they should command the interest of the school medical officer. For it is he who has the chance during adolescence to modify the balance of the endocrine system so as to turn what might have been a tragic abnormality into a passable, if not a normal, adult.

But it is with the psychological implications of these physical abnormalities that we are primarily concerned. Has it ever occurred to a school medical officer that the enormously fat girl of 15 is something more than a school joke? Has it occurred to him that he has some responsibility for her, in spite of the fact that she never takes a cold and is not sent to consult him for headaches? Has it never dawned on him that behind all that cheery good nature for which "Fatty" is notorious, there is a tragedy slowly evolving? If not, let me assure him that there is no psychotherapist of any experience but can tell him of the embittered or dejected fat woman of 25, who has come to realize that the abnormality is not merely in her contour, but that she is not as other women are, that her amenorrhoea is not without significance, and that she must renounce any dreams she may have had of "thinning down when she grew up," and, moreover, any aspirations she may have entertained of marriage and motherhood. A generation ago there was little to be done for such cases, but to-day, if taken early, much can be done, and much should be done, not merely from an aesthetic or even physiological point of view, but in order to reduce lifelong discontent and unhappiness.

Another type I would draw your attention to is the boy with an undescended or ablated testicle. I have seen a number of these ; they have all undergone torments of inferiority as the result of the ridicule to which they have been exposed. Generally the parents have not considered it suitable, or at any rate necessary, to inform head master or house master ; in most of the cases no master was aware of the condition, and in none did the matter come to the knowledge of the school medical officer. Now the male adolescent, under herd conditions, can be very barbarous, and the mental suffering to which these boys had been exposed was considerable. It is just this sort of suffering that makes an adolescent feel the bitterness which poisons his relations with society for life. I submit that such boys cannot possibly make a satisfactory adjustment to life if they are expected to face alone the uncomprehending disparagement of their fellows.

If we pass from the abnormal to the normal in the sphere of sex we are confronted with the common problem of masturbation. In day schools the problem can be, or at any rate is, left to the parents to deal with. How effectively or wisely they exercise their prerogative is within

the knowledge of some of us. But in boarding schools it is different. There seem to be two cardinal tenets among teachers in boarding schools ; the first is that no girl masturbates unless she is " quite abnormal," and the other is that no boy masturbates unless he is " definitely vicious." The practical measures which emanate from these beliefs are that when a girl is discovered to masturbate she is taken to a " specialist," and when a boy is detected in the practice he is dealt with as a delinquent to be castigated or a sinner to be reformed. Of these two measures the first generally does the lesser harm, for when the sinner is subjected to the process of reformation it is almost certain that he will be exposed to a number of threats, some of a theological order, in which the chaplain seems to exceed his commission, and some of physical consequences which bear no relation to truth.

When in the minority of enlightened boarding schools the boy is dealt with by the school medical officer he is sure to meet with more tolerant treatment. But is he likely to meet with any constructive treatment? He will, of course, be reassured about insanity, impotence, or even hell fire ; he will be told to take plenty of exercise and not to miss his cold tub ; he will perhaps be enjoined to eschew constipation and feather beds. But unless the medical officer has learned much that he was not taught in his curriculum, there will be very little positive or constructive help, for it is quite certain that in the five or more years devoted to learning his craft the medical officer never heard a single allusion to auto-erotism, still less to that far-fetched concept of narcissism. Nevertheless I venture to say that, as far as boys' boarding schools are concerned, there is no opportunity greater than this for promoting sound character development, nor yet one that is so consistently misused. Is it too much to hope that a generation of school medical officers may arise who can handle this problem better than embarrassed house masters, better than celibate chaplains, and better than second-rate physiologists?

If we turn to the other problem of homo-sexuality, we find a corresponding ineptitude in our treatment of it, simply because neither teacher nor doctor knows enough about it. At girls' boarding schools, where it flourishes in its milder forms of romance, it is ruthlessly stamped out by the cultivation of athleticism and often of masculinity, in such a way that one is tempted to wonder whether *all* the mistresses, or only some of them, are suffering from what Adler would describe as the " masculine protest." In boys' boarding schools it generally smoulders and occasionally breaks out in a conflagration which leads to expulsions, some desirable and others exceedingly unjust. House masters demand the instant removal of the perverts, and parents protest bitterly that their innocent darling has been corrupted. When such things occur, as we know they do, surely there ought to be someone properly equipped with authoritative knowledge of the psychology of sex, and surely that person should be the medical officer. I urge this matter on your attention, for I am convinced that it would be better to risk twenty boys getting measles unnecessarily than to have one of these homo-sexual catastrophes, which not only impair permanently the boy's social prospects, but may also warp his sexual adjustment for life.

Intellectual Development

I have dwelt too long on the physiological aspect of adaptation ; let me pass to the intellectual. Many people send their children to school to pass an examination. Whether that examination be " Little-go " or for a place at a secondary school makes little difference ; the point which matters is that the home emphasis is on intellectual achievement, and the result of that emphasis may be an anxiety state that may well bring the pupil within the doctor's purview. When, on the other hand, the child is sent to school " to find his level," " to get some sense," " to grow grit " and so on, there is much less chance of that tense and conscientious application to learning which delights the teachers who are sufficiently devoid of psychological insight to value it.

But lessons and examinations are not the only aspect of intellectual adjustment which the child should achieve at school ; he ought to acquire a general capacity to interpret and evaluate his own experience, he ought to learn a great deal about the logical consequences of his own actions. Now it is clear that some children have plenty of sense and very little capacity for acquiring knowledge, and there are some who show an all-round ineducability. While this is in general the teacher's sphere, the medical officer may well be consulted as to a congenital deficiency, and if he knows nothing whatever about mental defect he may be party to a child being pressed, or punished, or otherwise treated inappropriately when he might have saved the situation.

Emotional Adaptation

I pass now to the emotional side, which is by far the most important. The whole range of school life comprises the great transformation from the pre-school child—dependent, loved, accepting, protected—to the young adult—independent, loving, giving, and protecting. He began life outside society ; by the time he comes to school he is expected to have made the limited adjustments of a family circle ; at school he has to make his herd adjustment, and to make it while he is kept actively engaged on work and play, and while, moreover, physiological changes are going on within him of which he cannot fail to be aware and by which he is frequently bewildered or even terrified. We should not be surprised, therefore, if a small proportion of school children fail to make these necessary adjustments and develop some form of maladaptation or behaviour problem. We should be still less surprised if we considered for a moment the following very relevant circumstance. Throughout the entire educational process a compromise is being pursued, the compromise between social demands and self-realization. On the one hand the boy's behaviour has to conform to social standards, while on the other he is prompted by instinctive demands to behave quite otherwise ; he has to acquire knowledge which does not interest him, while his innate curiosity stimulates him to other inquiries ; he has to play the man while he would choose to be a different sort of man.

If we consider then the inherent conflict between the socializing aim of education and its simultaneous objective of self-realization, we can very easily see the possibilities of maladjustment. These maladjustments should be recognized at an early stage, and it should be regarded as evidence of second-rate pedagogy when the trouble is serious enough to demand the attention of the medical officer. But if we had a sounder outlook on mental hygiene the medical officer would be the active partner of the teacher in coping with those early manifestations which, as things stand at present, are neither dealt with by the teacher nor submitted to the doctor.

The first indication of maladjustment in many cases is an exaggeration of temperamental extraversion or introversion ; these are two reactions generally determined by herd fear. The first consists of excessive self-assertion, a compensation for diffidence by means of loquacity, boastfulness, self-assurance, interference, bidding for attention, and so on. The second consists of a withdrawing into oneself ; in Freudian parlance the " libido " is repressed and activates a fantasy life within the subject. This reaction is, of course, much rarer than the first, but whereas the end-result of extraversion may be

hysteria or delinquency, the end-result of introversion is dementia praecox. It would be well if school medical officers would realize the fact which Jung pointed out many years ago—namely, that for every case of dementia praecox that reaches a mental hospital there are scores of cases of schizophrenia which carry on a partially adjusted life. In all these cases, whether we designate them neurasthenia, psychasthenia, etc., we find that the school life was not normal, and that there was a noteworthy failure to make a social adjustment. I would go the length of saying that the real problem of dementia praecox is the prophylactic diagnosis and treatment of the early schizophrenic during his school life. If confirmation is required of my contention, I would point to the cases of school suicide ; it is true that they are few, and fortunately fewer in this country than in some others, but I submit that if an adolescent commits suicide at school it is evidence of such a gross failure of mental prophylaxis as to imply extensive neglect of minor cases.

In this connexion I would mention one symptom which is common enough to command interest ; I refer to stammering. It is true that stammers can often be improved, and sometimes cured, by teachers of elocution and speech therapists, but our experience at the Institute of Medical Psychology (where we have two very competent speech therapists at work) confirms my experience in private practice. I believe that every stammering child has some fault of emotional development, generally, of course, a parent fixation. I sympathize with the teacher who looks to the speech therapist for help with such cases, because the teacher knows well enough that the school doctor has no contribution to make. I maintain, however, that this should not be the situation, but that a medical officer with a reasonable understanding of psychopathology should be able and willing to investigate these cases.

Finally I come to delinquency. No doubt medical officers are frequently consulted about the persistent thief, the incendiary, the forger, but I believe that I am justified in stating that the schoolmaster or schoolmistress does not in such cases approach the doctor with any great optimism. And yet these juvenile delinquents are pathological cases ; they ought to be dealt with by the doctor, and in general they are extremely rewarding. But in point of fact a trained teacher (I exclude the untrained schoolmaster) knows more about the aetiology of these behaviour problems than most medical officers. I submit that the time is ripe for the profession to recognize that the field of mental hygiene in the school is in urgent need of cultivation, in that it is an opportunity for prophylaxis second to none in the whole extent of national health.

SOME COMMENTS ON SYPHILIS IN WOMEN*

BY

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Syphilis in women differs from the same disease in men only during the years when the menstrual cycle is a dominant in the rhythm of life. Before puberty, and after the menopause, sex makes little appreciable difference—the boy and the girl, the old man and the old woman, react similarly to the ravages of the organism.

We notice the dissimilarity between the sexes only, therefore, because women become infected generally during the period of sexual bloom—a time when it is known that the presence of functioning ovaries, and still more the advent of pregnancy, have a profound effect on the clinical picture of the disease. It is a commonplace of medicine, pointed out almost a hundred years ago by Colles[1] (1837), that many women go through the whole period of their sexual life without a single clinical sign of syphilis, and yet give birth to children who are obviously infected.

PATERNAL OR CONCEPTIONAL SYPHILIS

This observation gave rise to the theory that the father could infect the ovum *in utero*, and the mother might thus escape entirely. It was a theory which was badly shaken when it was found that most of such mothers gave a positive Wassermann in the blood, although they were clinically clear. No one has yet demonstrated spirochaetes in an ovum. It is even doubtful if they have ever been found in semen ; so, unless there is a resting or spore stage of the spirochaete, it is difficult to see how syphilis, passing from father to child without infecting the mother, is possible. French medical opinion, however, still clings to the view ; and its importance for us is that, if we accept it as feasible, there may then be exceptions to Colles's law (that a syphilitic child cannot infect its mother), and we may have to protect the mother from her congenital child by refusing to let her breast-feed it.

In a series of 94 pregnant syphilitic cases recently tabulated at the London Lock Hospital, 92 had positive Wassermanns, and were delivered of 79 healthy children and 13 congenitals (14.1 per cent.). The other two had negative Wassermanns in their blood before delivery, were delivered of congenitals who gave a positive Wassermann, and each developed a positive Wassermann herself within a month. French observers would claim this as presumptive evidence that the mothers became infected during delivery (Gougeret[2]). The usual view in this country, however, would be that the mothers had already been syphilized, and pregnancy was masking the Wassermann.

The practical point arising from this is that:

Unless both mother and child have a positive Wassermann, or mother and child have a negative Wassermann, the mother should not be allowed to suckle the child direct.

With two similar blood reactions there cannot reasonably be any risk of cross-infection ; but with dissimilar reactions either the diseased mother or the diseased child may infect the healthy one. It does not appear, as Uhlenhuth[3] and Mulzer[4] claimed in 1913, that milk itself is contagious ; and so, if the mother is diseased and her milk is drawn off into a sterile bottle, which has not been in contact with her, such milk may apparently be given to a healthy child with impunity. The child is thus not deprived of the benefit of its mother's milk.

ABSENCE OF CLINICAL SIGNS

We do not yet know exactly why it is that, during the child-bearing period, syphilitic women frequently have so few symptoms that it is impossible clinically to diagnose the disease in them. Probably the absence of a primary sore in many cases is more apparent than real. This is due to the fact that chancres on the external genitalia are usually painless, frequently small, often not indurated, and not uncommonly tucked away in some fold unnoticed by the casual eye. The researches of Anwyl Davies[5] also suggest that a large number of primaries occur on the cervix ; and as they are evanescent, and often not looked for, another factor in frequency has been over-

* Read in opening a discussion in the Section of Dermatology at the Centenary Meeting of the British Medical Association, London, 1932.

looked. Nevertheless, even allowing for these facts, it remains obscure why the primary lesion is so often missed in women.

Secondary Symptoms

Admitting the possibility of the primary lesion in women often being overlooked when present, there is no reason whatever why secondary symptoms, if they were as prominent as they are in the male, should go unnoticed. All of us, of course, can recall many cases of profuse secondary eruptions in women—particularly of the condylomatous and mucous tubercle type. None the less it is a fact that many women have no definite rashes at all, or merely mildly evanescent erythematous eruptions which quickly fade, and thus are readily taken for more innocent conditions. It is for this reason that the practitioner finds it extremely difficult to act, in the absence of definite signs, when he suspects his patient may have run the risk of acquiring syphilis—knowing, for instance, that her husband has it. It is not easy to take a specimen of blood without giving some definite reason for so doing ; and the result is that frequently the practitioner shirks his responsibility.

Leucoderma Colli

Faced with such a difficulty as this it is extremely important to remember that there is one syphilitic rash which is almost peculiar to women, and very common, lasting for many months even after a full course of treatment, and yet very generally overlooked, because attention is not often drawn towards it in the textbooks. I refer to leucoderma colli. This is a secondary eruption which appears on the neck and shoulders of women, often spreading to the axillae in marked cases. It is an irregular mottling in which the central white portions, about the size of a threepenny bit to a sixpence, are surrounded by irregular melanotic borders, the whole presenting a measly appearance. If one looks carefully for this eruption, it is surprising how frequently it is found, particularly in brunettes. As I have said, it lasts for months, and is quite unaffected by treatment. In the days before the Wassermann test it was an invaluable sign. It is absolutely pathognomonic of syphilis ; and if present one should insist on a confirmatory Wassermann, no matter who the patient may be. This is particularly necessary if the patient happens to be pregnant, for it is on the treatment adopted that the fate of the unborn child almost certainly depends.

Tertiary Lesions

These, unlike primary and secondary eruptions, are common in women with syphilis, particularly at the menopause. It is then very often for the first time that one discovers one's patient is an old syphilitic, the occurrence of a central perforation of the palate, a vocal cord lesion, a sudden ptosis, or a suspicious indolent ulcer on one of the lower limbs suggesting the diagnosis. Going back over her obstetrical history, one finds a record of one or more abortions or miscarriages, or of early death of children which has been attributed to other causes. Such a combination of circumstances, even when the Wassermann is negative, is practically diagnostic of syphilis—for it must be remembered that not more than 75 per cent. of tertiary lesions give a positive Wassermann. In circumstances like these one should give a small provocative injection of 0.3 gram of neo-salvarsan, and retest in forty-eight hours. This may produce a positive result. Alternatively one can use the therapeutic test, so familiar to the older clinicians, of giving iodide of potassium and watching for the result. If the condition is specific, there will be an immediate and dramatic improvement.

Cardiovascular and Late Nerve Syphilis

The former condition occurs in women in less than one-quarter of the percentage in which it is found in men. If, for instance, one thinks of the number of aneurysms one has seen, one finds that they have almost always been in men. This may be partly due to a sex differentiation, but is more probably attributable to the fact that women drink much less alcohol, and are exposed to less laborious occupations than men ; for it generally takes the triad—drink, hard work, and syphilis—to produce aneurysm.

Tabes, tabo-paresis, and general paresis occur in 0.5 per cent. of women affected by the disease, as contrasted with 3 to 5 per cent. in men. This comparative immunity in women is not due to any increased resistance to penetration of the central nervous system by the organism, if one is to judge by statistics obtained from an examination of the cerebro-spinal fluid of 250 cases after lumbar puncture at the London Lock Hospital, tabulated by Miss Gladys Sandes.[6] These cases were mostly in the secondary stage of the disease ; and it was found that 26 per cent. gave a positive C.S.F. Wassermann, 15 per cent. cleared up under treatment, and 11 per cent. remained unaffected by treatment. It will thus be seen that women's central nervous system appears to be quite readily permeable to the virus in the early stages of the disease. Why then do we find that so few women, comparatively speaking, develop late nerve syphilis? I think we must link up this observation with the similar facts found regarding disease of the cardiovascular system. It may be that the more sheltered life led by women again has something to do with this lesser incidence, but one is tempted to another solution—namely, that the protective functions of the ovary and of pregnancy have still more to do with it than anything else. Most women get the primary infection in the twenties or early thirties. Late nerve syphilis and vascular syphilis usually occur within twelve to twenty years of infection. Women are thus exposed to the peak-risk of nerve and vascular sequelae before 45 years of age—whilst their ovaries are still functioning—and it may be the protective power of the internal secretions, still circulating, that produces this comparative immunity.

The Wassermann Reaction

It is generally believed that the Wassermann test in women, especially in the early stages of the disease, is just as reliable as in men. Unfortunately this is not the case. Every now and again one gets a florid secondary syphilis in which the Wassermann is negative. During pregnancy there is a tendency for some women to give a doubtful or weak positive reaction which becomes negative immediately after parturition. Cases of this nature should not be treated as syphilitic unless the Wassermann, on provocative injection, becomes more positive, or unless, on repeated examination of the blood, the positive Wassermann is confirmed. Then there is the difficult sort of case, already alluded to, where a persistently negative Wassermann during pregnancy becomes positive immediately after delivery. This may be, as the French affirm, a failure of Colles's law, and an infection of the mother from the child. But it is more likely that it is a case where the chorionic hormones no longer inhibit the Wassermann reaction. In tertiary syphilis there is an average in the male of 20 per cent. to 25 per cent. who give a negative reaction. In women, this average rises to between 30 and 40 per cent., a circumstance often forgotten when the practitioner is puzzled by some curious skin eruption, bone swelling, or ulceration that will not clear up. A woman, presenting symptoms of this kind, should not therefore be deprived of the benefit of treat-

ment simply because her Wassermann reaction is negative.

This uncertainty about the Wassermann test is a little discomposing at times, as one cannot come to a clear conclusion in every case, but the uncertainty is rather individual than general. In a series of 2,200 cases of pregnant women examined by Boas, Gammeltoft, and Siecke,[7] it was found that 6.7 per cent. gave a positive Wassermann during pregnancy. The same women re-examined one to two years later, when no longer pregnant, still gave 6.7 per cent. of positive Wassermanns. We can thus assume, generally though not absolutely, that a positive Wassermann reaction in a pregnant woman means syphilis. We cannot, however, assume the comfortable doctrine that a negative Wassermann means the absence of syphilis or its successful treatment, for unfortunately quite 30 per cent. of congenital syphilitic children are born to mothers with a negative Wassermann (Stokes[8]).

GRAVITY OF THE DISEASE IN WOMEN

From the foregoing picture one can, quite justifiably, look upon syphilis in woman as a comparatively mild disease compared with the same affection in the male. It is rather more difficult to diagnose on account of the milder incidence of symptoms, and the disturbing effects of pregnancy and menstruation on the Wassermann reaction. But it is not nearly so likely to lead to the catastrophic vascular and nervous sequelae one associates with the later stages of the same disease in the male. Why, then, do we look upon syphilis in women as the most appalling calamity that can light upon the race? The answer is that it is not in the woman, but in the seed she may bring forth, that the disease takes its deadly toll.

Ballantyre, quoting statistics from the Edinburgh Royal Maternity Hospital, stated that the infantile death rate from untreated syphilis in the mothers was 60 per cent.[9] According to Hochsinger[10] in 1910, and Veeder[11] in 1916, 40 per cent. of syphilitic pregnancies ended in death of the foetus, and only 10 per cent. of those that survived were free of the taint. Routh[12] in 1918 estimated that 25 per cent. of stillbirths and abortions were syphilitic. Eardley Holland in 1922 was more conservative—15.3 per cent.[13] Findlay[14] in Glasgow found that 19 per cent. represented the death rate from abortions and stillbirths due to syphilis; and F. J. Browne in Edinburgh,[15] in a series of 400 cases, found his percentage was 17.5. These later figures probably indicate the improvement produced by better and more intensive treatment of the pregnant mother; but they are still double the normal of non-syphilitic stillbirths.[16]

Statistics such as these are depressing in themselves, but even then, unhappily, they indicate only half the picture. The other half is that of the unfortunate maimed children who survive six months or a year and then succumb, the feeble-minded epileptics, spastic diplegics, and juvenile general paralytics who may drag on to puberty, and all the other types of congenital syphilitics with whom we are familiar. It is when we come to consider the disease in women as it affects the race that the true proportions of its virulence can be appreciated. For, once a woman has become infected with the disease, all her subsequent children may be contaminated, even when such children are born to a different and healthy husband, as has not uncommonly happened after the remarriage of war widows. It does not matter that such a woman may have been adequately treated as soon as the disease was discovered. It does not matter that she now shows no sign of syphilis and has a negative Wassermann. *If she has once had syphilis, as long as she is capable of bearing children, such children may be syphilitic.*

The dictum of Kassowitz that the virus gradually wears itself out, and a woman goes through the stages of abortion, stillbirth, live congenitals, and finally healthy children, is not borne out by facts. A woman may have one or more stillbirths or live congenitals, two or three healthy children, and finally end up with a syphilitic baby right at the end of her child-bearing life. What are the chances of a woman having a healthy child if infected during pregnancy and not treated? Generally one may say that if infection occurs after the seventh month, the child will escape; between the fifth and seventh month it has a fifty-fifty chance; before the fifth month, it will be infected (McDonagh[17]).

PROFETA'S LAW

There is one grave warning that ought to be impressed on the profession—namely, that if a woman is infected late in pregnancy she may have local lesions or a strong blood Wassermann at the time of parturition, and may therefore infect her child at birth. In such circumstances one finds the child is born apparently healthy, gives a negative Wassermann in the blood, and then, after six to eight weeks, develops symptoms. Such a child has been infected at birth, and is really a case of acquired syphilis. It is for this reason that I always teach that a mother infected late in pregnancy should not be allowed to suckle her child; for, though Colles's law probably still holds good, Profeta's law (that a syphilitic mother cannot infect her newly born and apparently healthy child) is not true, but only appears to be so when this child is a congenital with delayed symptoms.

Anyone seeing a pregnant woman suffering from syphilis would immediately advise treatment, in the hope of saving the child. But many practitioners hesitate to treat a pregnant woman who is known to have had syphilis, and who is now Wassermann-negative. Theoretically a woman adequately treated should be in the same position as a man, but practically she is not; and therefore anyone adopting this attitude of *laissez-faire* towards her is living in a fool's paradise. Such a woman may bear syphilitic children to her husband after both he and she have had adequate treatment, and been declared cured. Such a woman may, as a widow, have been told that she can re-marry safely—a statement with which most clinicians will agree, if that means that she will not infect her subsequent husband. But no one with any real experience will agree that she can safely have children by that husband; for it has been found, time and again, that, as I have previously remarked, such women have, to their horror, produced congenital syphilitic children to husbands who are free from the disease. It cannot therefore be too urgently stressed that no matter what treatment a woman has had, no matter how clinically clear she may be, and no matter how long she may have been Wassermann-negative, she is still capable of producing a syphilitic baby as long as she is able to produce a baby at all.

Should a woman who has had syphilis be allowed to have any more children? The answer to this is "Yes," provided the woman is treated all through each pregnancy exactly as if she had just acquired the disease, for the chances of her having a healthy baby are then almost as good as those of a non-infected woman. There is, however, possibly one exception—that if a woman has a persistently positive C.S.F. Wassermann in spite of treatment, she should not be allowed to have another child. This is suggested by the statistics collected by Miss Sandes,[18] to which I have already referred. Among these cases were five pregnant women, each with a persistently positive C.S.F. Wassermann. Every one of these women gave birth to a congenital syphilitic in spite of average adequate treatment. The number is, of course, much too small to dogmatize on; but it is sufficiently suggestive to make one pause before promising a healthy child to any woman who carries out her treatment whole-heartedly.

TREATMENT

Here I need only consider broad principles, for treatment in women does not differ materially from that in the male. Women, as a rule, stand anti-syphilitic medication extraordinarily well. They have fewer complications ; they are less liable to the toxic effects of metallic poisoning than men, and relatively can stand more intensive treatment. It must be remembered, however, that owing to their smaller body weight they require smaller dosage. Few women need larger single doses of neo-salvarsan, or its substitutes, than 0.45 gram ; and the average course of such arsenical preparations should not exceed half a gram per stone—that is, a ten-stone woman requires 5 grams of neo-salvarsan in one course.

I always give a course of mercury or bismuth simultaneously with the arsenical medication, because I am a strong believer in the curative effect of the slow metallic intoxication produced by these drugs absorbed gradually and persistently from reservoirs in the buttocks, and I have no belief at all in the permanent curative effects of arsenical preparations.

I understand that it is the custom at some ante-natal clinics to treat pregnant women with arsenic alone. I have seen a considerable number of such cases, treated elsewhere, and I find that these are just the sort of cases which surprise one by having a positive Wassermann in their cerebro-spinal fluid, which further treatment is often unable to influence. Whatever we may consider this reaction portends, no one, I think, would care, wittingly, to risk producing it in his patients. It is said that by giving bismuth, or mercury, intramuscularly to pregnant women we thereby increase the chance of miscarriage. This has not been our experience at the London Lock Hospital, where we have many of these cases under observation for months as in-patients.

Bismuth is well tolerated by women, most of the newer preparations being painless, and rapidly effective, clinically. If I am giving it with arsenic, I like to give it once a week. If I am giving it alone, I use it twice a week. In the combined treatment I favour preparations which depend on metallic bismuth for their efficacy, rather than the more soluble forms. If I am using bismuth in cases intolerant to arsenic, I prefer the soluble preparations, because then one is anxious to have the most rapid absorption possible.

Mercury is not so well borne by women as bismuth. It is more painful intramuscularly, and it produces gingivitis more rapidly. For some six or eight years recently it has been rather under a cloud, having been ousted from pride of place by bismuth. But in the last year or so it has been regaining ground, since clinicians began to realize that the results of experiments on rabbits need not be authoritative for man, and that negative Wassermann results are no real indication of the efficacy of cure. It should, of course, be given in conjunction with arsenic. It is possible that time may show that its permanent effects are more lasting than those of bismuth. At present the question is still *sub judice*, with a bias in favour of the newer drug.

CONCLUSION

To sum up briefly then, I should like to emphasize the general consensus of opinion that syphilis in women, as individuals, is milder than in the male, more amenable to treatment, less liable to late nervous and vascular sequelae. But on the other hand, as regards the next generation, it has been until recently the most deadly curse to which the race is subject. I stress the word recently, for now I think that even in this direction we can face the future with greater optimism ; for, with the possible exception of cases with Wassermann-positive cerebro-spinal fluid, which will not yield to treatment, I believe that with modern methods there is no longer any necessity for any woman to have a syphilitic child, provided she is treated adequately as soon as diagnosed, and has a full course of further treatment during each succeeding pregnancy.

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NON-OPERATIVE TREATMENT OF CHRONIC HYDROCELE OF THE TUNICA VAGINALIS

BY

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Every practitioner is familiar with the patient, suffering from the acquired type of chronic hydrocele of the tunica vaginalis, who refuses an open operation for various domestic reasons. The patient would willingly undergo "tapping" and the injection treatment if he could be assured that the treatment would not interfere with his normal testicular function and that he would be cured.

During the past five years I have performed the injection treatment on ten private cases, in none of whom has there been any recurrence within three months to three years. Impotence occurred in one case for about six months, otherwise normal testicular function was maintained in all. No direct cause could be assigned to any case from an investigation of the fluid withdrawn from the sac.

AETIOLOGY

The tunica vaginalis is of the same histological structure as the peritoneum and has the same morphology. There is also a similarity in the pathological changes occurring in each. It consists of a single layer of flattened epithelium resting upon fine connective tissue, in which run lymphatic channels. Between the endothelial cells stomata, arranged irregularly, communicate with the lymphatic spaces (Schafer). This fact is refuted by some histologists. The endothelium is richly supplied with blood vessels. Nerve fibres travel along these vessels to the endothelium, where they form a fine plexus (Quain). These anatomical data present three possibilities as to the cause of hydrocele—excluding any direct cellular disorder: (*a*) nervous ; (*b*) vascular ; (*c*) lymphatic.

Increased nervous stimulation would probably lead to excessive endothelial secretion (as also would increased vascularity), but not of sufficient amount to produce a hydrocele. Furthermore, in those cases upon which I have operated, I have not noticed any marked inflammatory changes.

Lymphatic obstruction seems the most probable cause, since this is certainly the cause in hydrocele due to the *Filaria bancrofti* occurring in the West Indies. The fluid removed from a filarial hydrocele is identical with that from the ordinary hydrocele. The filaria mostly cause

the block in the glands. Is it not possible the *B. coli* may not cause the same obstruction by direct infection of the glands from the bowel? Constipation is generally marked in these cases. If the hydrocele were tapped once, the bowel irrigated by the suda bath method, and the alkaline reserve of the blood maintained, it is possible that, if the glands had not become too fibrosed by inflammation, medical treatment might suffice for a cure.

Rationale of Injection Treatment

Small quantities of iodized phenol are injected into the cavity of the tunica vaginalis, with the object of cauterizing the endothelial surface, closing the stoma, and causing the two surfaces of the sac to adhere together—thus closing the cavity completely. If an inflammatory reaction is produced in this way, during the process of healing, protoplasmic buds are sent out from the surfaces, which adhere to form a fibrosed mass. Unless the fluid injected is equally distributed over the surface of the endothelium, loculi will form, and recurrence will occur more easily. Also unless the fibrosed mass—in fact before it has time to become too fibrosed—is massaged regularly inflammatory reaction will be set up in the testis, and may cause impotence.

Technique of Method

The amount to inject in each case must be decided by the general condition of the patient and the size of the hydrocele. Not more than 5 c.cm. should be injected at any one sitting or serious inflammatory reaction will occur. It is better to commence with 2 c.cm.

The patient is placed in the lithotomy position on a genito-urinary table and the entire perineum and scrotum cleansed with ether soap ; surgical methylated spirit is applied, which partly anaesthetizes the area. The surgeon stands in front of the patient and with his left hand applies pressure from above downwards from the upper part of the scrotum, so that his fingers lie behind and can palpate the testis. A 20 c.cm. Record syringe, fitted with a full-size needle, is used. The needle is thrust through the scrotal tissues in an upward direction, carefully avoiding the superficial vessels. On piercing the sac all resistance disappears, demonstrating that the sac has been entered. All the fluid is withdrawn with the syringe. Then, with the needle still *in situ*, iodized phenol (4 parts iodine to 2 parts phenol, 3 minims for every ounce of fluid withdrawn is safe) is injected into the sac through the same needle. This is removed as soon as the injection has been completed, and the scrotum is massaged for about five minutes. A collodion dressing is applied to the needle puncture. The patient usually experiences a burning sensation for a few minutes. Sal volatile should always be at hand, as the patient sometimes feels faint.

After treatment the patient should rest in bed for twenty-four hours with the scrotum supported upon a pillow, and should there be any pain, a lotion such as lotio plumbi c opio should be applied frequently on lint.

Case Record

Case IX, a wood-joiner, aged 63, from Suffolk, complained of bilateral hydrocele of four years' duration, which had been periodically tapped by his own doctor. There were no urinary symptoms, no history of tuberculosis, and he denied any venereal disease. Constipation was constant without strong purgatives. Examination revealed no obvious focus of infection or evidence of tuberculosis or venereal disease. He suffered from myocarditis of rheumatic origin, and had attacks of dyspnoea. His general condition would not have warranted an open operation. Locally there was a bilateral hydrocele distending the scrotum to the size of a Rugby football. The size and weight were so great that it was necessary to have a special suspensory bandage made for him.

In view of the patient's poor general health I deemed it wise to refrain from attempting to cure the condition in one sitting. The following treatment was therefore adopted.

September 10th, 1931. Left hydrocele tapped—1¾ pints of clear, straw-coloured fluid removed and 2 c.cm. iodized phenol injected. Right tapped—2 pints withdrawn ; no injection.

November 23rd, 1931. Left hydrocele—slight recurrence: 6 oz. fluid withdrawn, 3 c.cm. iodized phenol injected. Right —20 oz. fluid withdrawn, 3 c.cm. iodized phenol injected.

February 3rd, 1932. Left hydrocele—no recurrence. Right —5 oz. fluid withdrawn, 3 c.cm. iodized phenol injected.

June 2nd, 1932. Left and right hydrocele—no recurrence. Small fibrosed lump felt in front of each testicle. Testicular sensation normal.

Observations

Hydrocele of the tunica vaginalis is a common condition, usually occurring in middle life.

Injection treatment is simple, effective, and curative, and is not followed by untoward complications.

There is no recurrence or complications such as are sometimes met with after open operation.

No anaesthetic is necessary for injection treatment, and there is the minimum absence from work.

Many cases are associated with constipation, which suggests that the cause may be auto-intoxication from the bowel through the lymphatics, acting as an obstruction to their normal circulation.

Memoranda

MEDICAL, SURGICAL, OBSTETRICAL

SYMPTOMLESS CORONARY THROMBOSIS

On January 12th, 1932, a retired schoolmaster, 70 years of age, was sitting at the table in a public library, writing, when he collapsed on to the floor and died almost instantly.

History of the Case

One of us knew the man slightly, and was his family doctor, although he had never attended him professionally as he was never ill. Careful inquiry from his relations and friends has failed to suggest that he had had any symptoms whatever before the fatal seizure. He spent most of his time reading novels in front of the fire, smoking innumerable cigarettes—in fact he was never without a cigarette in his mouth. (Levine mentions smoking as one of the possible causes of coronary thrombosis.) He had spent Christmas with his family in London, and enjoyed it with the youngest. On the afternoon of his death he had had tea as usual, and went out about an hour afterwards. He does not seem to have had any difficulty over the two flights of stairs leading to the library nor to have been short of breath. He had been sitting down for about half an hour before he collapsed. He never complained of pain, and any shortness of breath he may have had he attributed to his age. His appetite was good, and his wife never thought he was ill, nor indeed that he was a bit off colour ; but one of his friends has since said that he thought the patient looked older and greyer after his return from London early in 1932.

Post-Mortem Findings

At post-mortem he was a well-nourished man, rather muscular for his age. The pericardium contained about an ounce of blood clot. The heart was normal in size, but there was an aneurysmal dilatation half an inch across on the posterior aspect of the left ventricle, over which there was some patchy thickening of the pericardium. Rupture of this area of thinned muscle was the immediate cause of death.

The coronary arteries showed gross senile degenerative changes ; the left was the more extensively damaged, its anterior descending branch being converted into a rigid calcified tube, with its lumen irregularly diminished in size but nowhere completely occluded. The circumflex branch, passing down the posterior aspect of the left ventricle, was almost occluded at a point one inch from the auriculo-ventricular groove ; thrombosis had taken place just below this narrowing, resulting in infarcation of the myocardium. In the process

of healing, the infarcted mass of muscle had become thinned and fibrotic, allowing the formation of an aneurysm, below which the myocardium was grossly fibrotic as far as the apex of the left ventricle. The endocardium over the affected area was somewhat thickened and roughened, but no thrombus was attached to it. The right coronary artery displayed patches of atheroma, and terminated as a very small posterior descending branch. The aortic and mitral valves were slightly thickened, but the valves of the right side were normal.

Microscopical examination confirmed the naked-eye appearances, showing the atheromatous nature of the arterial degeneration and the absence of any features of syphilitic disease. The ischaemic necrosis of the myocardium had been followed by fibrous tissue replacement of the destroyed muscle. All evidence of the immediate reaction to infarction had disappeared, and it is probable that some months at least must have elapsed between the initial thrombosis and the fatal termination. The lungs, liver, spleen, kidneys, and brain were normal. There was no oedema.

It is well known that coronary thrombosis may occur without pain, but when one considers the profound general illness usually associated with the condition it is surprising that a man and his friends should be entirely ignorant that anything serious was amiss.

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PHOSPHORUS AND ALLERGY

The following case of allergy presents a point of interest which may have some bearing on the nature of allergic conditions in general.

The subject is a man, aged 30. His father suffered from hay fever. His grandmother (maternal side) was a victim to asthma and bronchitis. The patient himself suffered periodically from hay fever until he went to live in the country four years ago (a district 300 ft. above sea-level, having an ironstone subsoil). On one occasion recently he was working in his garden with phosphate of lime—spreading the substance as a dry powder. After working thus for about an hour he noticed symptoms similar to those produced whenever he has eaten fish, to which he has been sensitive since early childhood. The symptom was that of swelling in the throat, and forced him to abandon using the phosphate of lime. There was not the accompanying vomiting such as occurs on his eating fish. The symptoms lasted for five hours—until bedtime—and had disappeared next morning. He has not been in contact with phosphate of lime since that time.

Discussion

It occurred to me that phosphorus might play a part in allergic conditions, being a constituent of protein—the usual excitant of allergy. A search through the literature revealed the following facts in this connexion:

1. Those substances known to be common causes of allergy are, as a rule, comparatively rich in phosphorus. Rackermann gives eggs, wheat, cow's milk, and, to a lesser extent, fish, as by far the commonest foods giving rise to allergic symptoms. The following tables show the high phosphorus content of these foods compared with other articles of diet:

Percentage of phosphoric acid (P_2O_5) in some fresh foods (Hutchison).

	Per cent.		Per cent.
Eggs	0.337	Cabbage	0.089
Milk	0.220	Turnip	0.058
Potato	0.140	Carrot	0.036

Amount of P in 100 grams of fresh substance (ash content of the edible portion of some common foods (Sherman).

Wheat, entire grain...	469 mg.	Potato	61 mg.
Oatmeal	380 mg.	Cabbage	27 mg.
Beans, lima, dried ...	336 mg.	Beefsteak, lean ...	22 mg.
Rice, polished ...	89 mg.	Apples	13 mg.
Wheat flour	86 mg.		

The second part of the table brings out the very high proportion of phosphorus in wheat—one of the commonest causes of allergy—as compared with other foodstuffs. Different meats vary considerably in their phosphorus content. According to Sherman fish has a slightly higher phosphorus content than meat. An analysis of eggs and of milk reveals phosphorus to be the largest constituent of the ash in each case, with the exception of potassium.

2. Individuals manifesting allergic symptoms frequently have a low blood phosphorus. Sterling says: "We have found a marked deficiency in phosphorus in allergic people." Bray found a tendency to a low blood phosphorus in allergic children—thirteen out of thirty cases showed a blood phosphorus of less than 4 mg. per 100 c.cm.

3. An important method of treating allergy tends to increase the absorption of phosphorus from the intestine by the administration of hydrochloric acid by the mouth. Bray found in 200 analyses of the gastric secretion of asthmatic children that 80 per cent. showed a response of acid gastric secretion below the normal. Other investigators (Hurst, Duke, Brown, Rowe, Criep, and McElroy) have found varying proportions—sometimes strikingly large—of allergic subjects with hypochlorhydria or achlorhydria. As a result, Bray, Lockard, Beckman, and others have used the empirical remedy of hydrochloric acid in cases of allergy with deficient acid gastric secretion. Beckman in 1930 "collected together the results obtained in 237 cases treated by thirty-four physicians, each using the remedy for the first time. Of this number 160, or 67 per cent., obtained complete or marked relief of symptoms."

Now alkali interferes with the absorption of phosphorus from the intestine, whereas "acid promotes absorption of phosphorus" (Peters and Van Slyke). This fact does not appear to have been related to allergy in the literature of the subject, but is mentioned by the above authors, as follows: "Acidity of the intestinal contents also affects Ca and PO_4 absorption. Other factors being equal, an acid diet causes diversion of more Ca and PO_4 from faeces to urine than an alkaline diet."

Is it possible that the administration of hydrochloric acid in cases of allergy acts by promoting the absorption of phosphorus from the intestine, increasing the phosphorus content of the blood, and thus removing an "inner" factor of the allergy—an abnormally low blood phosphorus?

4. The effects of phosphorus poisoning in some respects closely resemble allergic conditions. In phosphorus poisoning the throat and tongue may become swollen, and vomiting may occur. Swelling of the throat and tongue, with vomiting, may also be seen in certain cases of allergy—for example, from eating fish. Urticaria, one of the allergies, sometimes results from phosphorus poisoning. Workers in match factories, using phosphorus sesquisulphide, are liable to bodily effects similar to those of hay fever: "The sesquisulphide acts, in some instances, as an irritant, causing conjunctivitis and oedema of the eyelids" (Rosenau). These match workers are also liable to eczema of the skin.

5. A low blood phosphorus might be caused by an inability to make full use of the phosphorus in the diet (for example, in achlorhydria), or it might be due to a deficiency of phosphorus in the diet. In the United States this deficiency does seem to exist. According to Sherman 0.88 gram of phosphorus is required daily for a body weight of 70 kilos. He states that "only eight out of 224 American families received this amount in their daily diet."

While no definite conclusion can be drawn from the above facts, they seem to suggest that some allergic conditions may be due to the ingestion of substances rich in phosphorus by individuals with a low blood phosphorus.

I wish to thank Dr. G. W. Bray for corrections in the preparation of the above memorandum.

London, W.9. R. L. Worrall, M.B., Ch.M.

Reviews

CLIMATE AND HEALTH

In his handbook *Climate and Acclimatization*[1] Sir ALDO CASTELLANI classifies the very diverse climates of the world under five subdivisions: (1) the solar or astronomical, including latitude; (2) the geographical—continental, oceanic, insular; (3) the topographical—plain, hill, mountain, valley, desert, and the "artificial climate" of large cities; (4) the aero-physical, and especially the interaction of temperature and moisture; and (5) the physiological, including both the general effects and the sensations which climates produce. An interesting chapter is devoted to a discussion of the effects of climate upon physiological processes, including a full account of the causes and treatment of heat-stroke and heat exhaustion. Although the greatest mortality and illness in the Tropics is due to imperfect sanitation and protection against disease, the author ranges himself with those who acknowledge an effect of climate *per se* upon health. It must be admitted that resistance to disease may be profoundly modified by the physical environment. The adaptability of plants and animals to a new climate is often very limited, and the human species has an altogether exceptional power in this respect. The tolerance of a young and healthy man to extreme changes of temperature signifies a very perfect mechanism of thermo-regulation. This remarkable power of compensation against external cold and heat in arctic and tropical climates by no means invalidates the law that external physical impressions invoke favourable or unfavourable reactions in man as in all other forms of life. The vexed question of the colonization of whites in the Tropics is fairly stated, and Huntington's conclusions quoted that there are optimum climates for physical and for mental energy. In hot countries basal metabolism and vasomotor tone are both reduced, and in India breakdowns of health are often only prevented by periodical return to a temperate climate. Colonies of whites cannot flourish permanently in low-lying tropical regions where the air is hot and moist and there are no cool seasons. Such a climate lowers the resistance to disease, and is injurious to the nervous system—witness the "tropical amnesia" and nervous and mental exhaustion on the West Coast of Africa. Even in the subtropical Bahamas, where the temperature is never below 50° F., Huntington finds that the whites retrogress, many degenerating into "poor whites." The book abounds in practical suggestions: advice on headgear and clothing, houses, offices, roads, railway carriages. Alcohol should never be taken before the sun goes down; protection from sunlight is an urgent need, both for the eyes and for the whole body, and there can be no doubt that the pigmentation of the natives is protective. The book should be carefully studied by all who are interested in the medical value of climates and of "change of air," quaintly and cogently set forth long ago in the *Anatomy of Melancholy*. The importance of change of air, even in temperate climates, which is implicit in the practice of the health resort, is still unexplained. It is seen in the effect on respiratory catarrhs and asthma of purely local climates.

Dr. LOEWY, who is the head of a research institute in Davos, defines the subject of his book[2] as the field of science dealing with the action of climate on the normal or pathological physiology of living creatures, especially man. A series of lectures to medical and meteorological audiences is reproduced in this little treatise. The author considers the factors of climate influencing human physiology and their measurement by skin temperature, sweating, urination, and gas metabolism, and also subjectively by the sense of well-being or discomfort. Meteorological data are insufficient in estimating the effects of climate, vegetation being sometimes a good guide. In this connexion the phenological reports published by the Royal Meteorological Society are well worthy of study. In regard to the demands which they make for special resistive reactions, he divides climates into "indifferent"—inland plains and moderate elevations and sheltered seacoast—and "different"—desert, Tropics, and high mountains. The power of adaptation to climates is illustrated, and hints are given as to the diet and other measures which may increase this power.

[1] *Climate and Acclimatization*. By Sir Aldo Castellani, Hon. K.C.M.G., D.Sc., M.D., F.R.C.P. London: J. Bale, Sons and Danielsson, Ltd. (Pp. viii + 152; illustrated. 7s. 6d. net.)

[2] *Über Klimatophysiologie*. Von Professor Dr. A. Loewy. Leipzig: G. Thieme. (Pp. 77; 13 figures. RM. 4.80.)

INTRACRANIAL TUMOURS

In a small book with this title Dr. HARVEY CUSHING[3] summarizes his personal experiences from 1901 to 1931 with 2,000 verified intracranial tumours. It is primarily a statistical study of surgical treatment, but it contains much other information about intracranial tumours, and the reader can glimpse the building up from small and unpromising beginnings of a large and world-famous neurosurgical clinic. The 2,000 tumours are subdivided pathologically, and there are separate chapters for gliomas, pituitary adenomas, meningiomas, acoustic tumours, congenital tumours, metastatic tumours, and so forth. For each group the value of different methods of treatment is considered and illustrated by case reports, and the results of operative treatment are given, first for all cases and then for the last fifty cases of the group. The results show that great progress has been made in the operative treatment of all varieties of intracranial tumour, especially during the last five years, and the reader cannot fail to be impressed by the intense and persistent activity of Cushing and his pupils and by the tremendous achievement that is here so modestly and gracefully described.

The chapter on operative statistics should be read by every surgeon. The author considers that operating would become highly irksome unless the surgeon kept a record, or as he calls it "the score," of his operative mortality. In his clinic the recording is done by a secretary, and the principal rule is that "every death in hospital following an operation, from any cause whatsoever, no matter how long the interval, is recorded as a post-operative fatality." Tables show the reduction of operative mortality during successive years, and from 1922 to 1931 the case mortality for the series as a whole was reduced from 23.4 per cent. to 8.8 per cent. The author considers briefly the various steps which have led to this great reduction in mortality, and notes that the operative mortality for any one variety of brain tumour falls as soon as the life history of the tumour has been worked out. For example, the case mortality in 176 acoustic tumours over successive periods has fallen from 28.6 per cent. to 4 per cent. (two deaths in the last fifty cases). The author believes that his own low mortality rates will soon be bettered by others, but it is likely that his figures will be the standard statistics for brain surgery for many years. In publishing them Dr. Cushing has done great service to brain surgery, for comprehensive figures of a large consecutive series of brain operations have not been available in the past. This book will do much to encourage neurological surgeons to reduce their operative mortality below

[3] *Intracranial Tumours*. Notes upon a Series of Two Thousand Verified Cases with Surgical Mortality Percentages Pertaining Thereto. By Harvey Cushing. London: Baillière, Tindall and Cox. 1932. (Pp. xii + 150; 111 figures. 26s. 6d. net.)

10 per cent., and it shows, incidentally, that such a low mortality rate cannot be obtained by decompressions and incomplete operations, designed merely to get the patient out of hospital alive with no thought for what his ultimate welfare will be. In these circumstances it would be carping to criticize the statistics as relating only to the immediate effect of operations. They are, as the author says, but the first step towards estimation of the ultimate results of removal of brain tumours.

BACKACHE

The handbook on *Backache*[4] by two members of the staff of Johns Hopkins University is one of a series designed to furnish the general practitioner with monographs on various subjects. It seems to be suited to the end in view. While necessarily not exhaustive, it presents a good and clear account of the anatomy of the spinal column and the pelvis, and of some of the groups of symptoms which are characterized by backache. Of sacro-iliac subluxation—a diagnosis not long ago as frequently made in the United States as it was rarely in England—the authors write that it "is now believed to occur less often than was formerly supposed." This must be a relief to British surgeons, who began to think that their diagnostic methods might be faulty. Like the rest of the series, this volume is well illustrated and attractively bound in a leather cover, reproduced from a fifteenth-century example now in the library of the College of Physicians in Philadelphia.

RADIOLOGY OF THORACIC LESIONS

Clinical Roentgen Pathology of Thoracic Lesions,[5] by Dr. William H. Meyer, is the first published volume of a series which will deal with the radiological study of the various anatomical systems of the human body. It is planned on most generous lines, as one can see from a perusal of the contents, but unfortunately the author, in order to keep the size of the volume down to a minimum and to present the subject in a concise form, has had of necessity to sacrifice too much. After a short introduction, which deals all too briefly with the principles of radiographic interpretation, a scheme for "analysis of the complete thoracic structures" is given. It is a well-considered scheme, and might be carried out with advantage by the student of radiology at the beginning of his career, but later on he is sure to find that in a busy *x*-ray department time will not permit of such elaborate analysis as is here indicated.

The volume is divided into six sections. Technical matters, such as posture of the patient and "postural variations in relation to gravitational, hydrostatic, and aerodynamic principles," are described in the first section; the remaining sections deal with "Roentgen pathology," diseases affecting the "thoracic cage," special diseases of the respiratory system, lesions of the heart and pericardium, and, lastly, a section on the oesophagus and subphrenic organs in relation to intrathoracic disease. Section IV, which deals with the special diseases of the respiratory system, is the most useful part of the book, practically nothing of importance being omitted. It is, however, so condensed that the student, in order to obtain a reasonable knowledge of the subject, will have to search elsewhere. It is a pity that in a book of this kind references to sources of information are not given, for these would have been of great use to the student; but the author states that they have been omitted in order to keep the size of the volume down to a minimum.

The book is profusely illustrated, all the reproductions being from negatives. They are well chosen and are supplemented by many line drawings. There seems to be some confusion regarding the terms "dorso-ventral" and "ventro-dorsal," as will be seen from a study of the *x*-ray illustrations—for example, No. 123 and No. 124. It would be much better if the terms "anterior" and "posterior" were used, indicating the relative position of the patient to the film. An excellent cross-index is provided. There is little that is new or original in the book, but it provides a short and clear account of the investigation of thoracic lesions by means of *x* rays, and much information on the interpretation of *x*-ray appearances and their correlation with pathological conditions.

EXAMINATION OF THROAT, NOSE, AND EAR

The novice in otology and laryngology will find a useful guide to his early studies, which are largely concerned with the manipulation of unfamiliar instruments and appliances, in a book by Dr. Chatellier on the examination of the throat, nose, and ear.[6] The author displays a practical acquaintance with the difficulties of the beginner and with the faulty habits so easily acquired, and by his teaching is evidently familiar with their prevention and correction. He emphasizes many minor but important details, such as the value of habitually holding the laryngoscope in the left hand, leaving the right hand for the exceptional but delicate intralaryngeal manipulations, and the need for a stock of instruments of various sizes to suit all sorts of patients. It is in the simpler kinds of examination, the hardest for the beginner to overcome, that the author is found at his best in his numerous practical hints and illustrative diagrams. For the ordinary illumination the mirror of Clar, so widely used on the Continent, is recommended and described in great detail, the ordinary concave mirror for the forehead being briefly dismissed. As the whole structure of the specialty is based on efficient illumination and the capacity to employ it, and the mirror of Clar is not always available, nor is it commonly used in many clinics, a broader outlook would have helped many students. The same applies to the direct method of examination of the larynx. The instruments of Brunings with proximal illumination and the split mirror, so exasperating to manipulate, are described and figured. These instruments have been of untold value, but are not used now in the majority of clinics. The usual instruments with distal illumination receive the barest mention.

The beginner will find here a mine of useful information, which he is likely only to acquire by many a failure and hard experience, and it is therefore unfortunate that the author's discursive style will probably repel many whom he might otherwise have attracted. He might have said all he has to say in a book less than half the size without the omission of a single fact, and he might still have done this and maintained a broader outlook. In consequence he is not likely to secure many English readers, as the book is in no sense one for reference, but those who do apply themselves to it will find much useful information and pleasant reading.

[4] *Backache*. By Lewellys F. Barker, M.D., LL.D., and John H. Trescher, M.D. Everyday Practice Series. London: J. B. Lippincott Company. 1931. (Pp. xiii + 235; 55 figures. 21s. net.)

[5] *Clinical Roentgen Pathology of Thoracic Lesions*. By William H. Meyer, M.D. London: H. Kimpton. 1932. (Pp. xiv + 272; 183 figures. 28s. net.)

[6] *Initiation aux Examens Courants de la Gorge, du Nez et des Oreilles*. Par Henri-Pierre Chatellier. Préface de L. Baldenweck. Paris: Masson et Cie. 1932. (Pp. — + 324; 152 figures. 50 fr.)

NOTES ON BOOKS

Mr. COMYNS BERKELEY'S handbook of elementary obstetrics[7] has now reached its eighth edition and fiftieth thousand. In revising the text the author has rewritten many passages, has recast the chapters on breech delivery and asphyxia neonatorum, and has added a new chapter on the principal indications for the various obstetric operations. In its new form this most useful little work will no doubt win a fresh lease of popularity among candidates for the Central Midwives Board examination. It will probably prove of assistance also to those preparing for the diploma examination recently instituted by the Board.

In *Recent Advances in Botany*[8] E. C. BARTON-WRIGHT discusses plant structure, palaeobotany, experimental methods in relation to the species problem, and various topics relating to fungi and algae. A short but interesting account is provided of the various diseases of plants, but the cytological and genetic sides of botany have been held over for treatment in subsequent volumes.

On very similar lines to another small monograph, also in the German language, recently reviewed in these columns, The Clinical Aspects of Diabetes in Childhood,[9] by Drs. R. FREISE and J. M. JAHR, is an attempt to assess the different outlook which is now justifiable as a result of insulin. These authors, both working in Berlin, reach the same conclusions as the authors of the other monograph, writing from Vienna, that nowadays no child ought to die of diabetes. Their descriptions of the clinical features and methods of dieting are well set out, and the details of the management of the case during a febrile period are especially valuable. It is not quite clear if the high carbohydrate diets have been studied by them, although some of the specimen diets given show high figures for this portion of the intake.

Under the title *Physical, Physiological and Pathological Studies of Dental Enamel, with Special References to the Question of its Vitality*,[10] SAM KARLSTRÖM of Gävle, Sweden, publishes the results of his investigation of the properties of enamel as revealed by the scleroscope. The instrument used was the Herbert Pendulum Hardness Tester, and the enamel of human teeth and of some of the lower animals was tested. The tests were applied at different vertical levels of the tooth crown and at different depths of the cross-section of the enamel. Further, the specific gravity of the various parts of the enamel was determined and compared with the corresponding scleroscopic findings. The author finds that the surface enamel is harder than the deeper layers, the surface layer once formed undergoing no further hardening. He observes, however, that the deeper layers show evidence of a diminution in hardness in the case of pregnant women, basing his conclusion on a comparison of the hardness curves of "normal" enamel and of enamel from pregnant women. His results, he thinks, show that under certain conditions there is a possibility of metabolic changes taking place in the enamel. He notes that the scleroscopic characters of the enamel of the temporary and permanent dentitions are decidedly different, and that the enamel of the first permanent molar shows the characteristics of that of the permanent dentition. The enamel of lower animals he finds to be softer than human enamel: dog enamel, he thinks, shows evidence of post-eruptive hardening. This is an extremely interesting piece of work, which we greatly hope the author will pursue further, in spite of its arduous nature. We cannot help remarking that the number of teeth investigated is perhaps too small to allow of more than tentative conclusions, and that, in the case of pregnant women, controls from the same patient would supply more convincing proof than the author presents.

The Doctors' War, by D.A.D.M.S.,[11] is an account of the medical services of one of the old regular divisions from August, 1914, to March, 1916. The division mobilized for war in Ireland with the city of Cork as its headquarters. The Channel was crossed early in September, and the division took part in the advance from the Marne to the Aisne. Subsequently it went into trenches in various parts of the line at Armentières and Ypres. In telling his tale D.A.D.M.S. makes no attempt at developing a stylish prose. It is a mere statement of facts, and as a description of events is not without interest. Much of the story is composed of extracts from a diary which this energetic officer found time to keep during the turmoil and excitement of the campaign. Here are set down such matters as the arrival of the first motor ambulance for the division when the war was already two months old; the establishment of the first regular systems for bathing and de-lousing; the early anti-gas arrangements. Most of the tale has been told before, but the reader of these pages will find much in them to repay a careful perusal. There are several good stories scattered through the narrative, and these are set down with a light and easy touch. It is a pity that the author should have temporarily lost his sense of humour in relating the incident about the Uhlans on the middle of page 5. As D.A.D.M.S. says, "Best to forget these things." But how are we to do so when he produces them again on one unsupported statement, eighteen years after? Except for this blemish, *The Doctors' War* is a thoroughly readable document, which may be recommended to those interested in recalling the medical effort in 1914–18.

[7] *A Handbook of Midwifery for Obstetric Dressers, Pupil-midwives, and Midwives.* By Comyns Berkeley, M.C., M.D., F.R.C.P., F.R.C.S., F.C.O.G. Eighth edition. London: Cassell and Co., Ltd. 1932. (Pp. x + 609; 67 figures. 8s. net.)

[8] *Recent Advances in Botany.* By E. C. Barton-Wright, M.Sc. London: J. and A. Churchill, 1932. (Pp. viii + 287; 58 figures. 12s. 6d.)

[9] *Die Klinik des Diabetes Mellitus im Kindesalter.* Von Privatdozent Dr. R. Freise and Dr. J. M. Jahr. Berlin: S. Karger. 1932. (Pp. 57; 4 figures, 3 plates. M.4.80.)

[10] *Physical, Physiological and Pathological Studies of Dental Enamel, with Special References to the Question of its Vitality.* By Sam Karlström, L.D.S., D.M.D. Stockholm: A.-B. Fahlcrantz. 1931. (Pp. 182.)

[11] Reprinted from the *Journal of the Royal Army Medical Corps.* London: J. Bale, Sons and Danielsson. 1932.

PREPARATIONS AND APPLIANCES

INTRA-ABDOMINAL TUBAL INSUFFLATION CANNULA

Mr. A. C. PALMER, F.R.C.S., F.C.O.G., writes: The instrument shown in the accompanying illustration is designed for the insufflation of the Fallopian tubes from the abdominal cavity. When the result of the cervical insufflation is in doubt, and the abdomen has been opened for some other purpose, the use of the instrument gives definite information with regard to the patency of the tubes. In cases of displacement accompanied by adhesions, with or without closure

of the abdominal ostia, the cannula again gives reliable information; it can also be used for stretching a fibrosed isthmus. Normally gas passes in one tube and out of the other at 30 to 50 mm. Hg, and, on occluding one tube, the gas passes out of the cervix at a slightly higher pressure. For the purpose of stretching the isthmus the pressure can be raised to 180 to 200 mm. Hg without injury to the tube. This cannula was made for me by Mr. Chas. F. Thackray, 252, Regent Street, London, W.1, and Park Street, Leeds.

GLASS AMPOULES

We have received from the Glaxo Laboratories glass ampoules which, after scratching, open easily and with a clean break. Everyone knows the annoyance that can be caused by an ampoule which at first refuses to break and finally splinters, and the new form, which is made with a small bulge in the neck, represents a very great convenience. The makers state that ampoules of this practical design have been used on the Continent for a considerable period. Messrs. Glaxo are putting out a series of standard drugs in ampoules of this pattern. In recognition of the ever-increasing use of hypodermic injections they have endeavoured to reduce the cost as much as possible.

British Medical Journal

SATURDAY, AUGUST 6th, 1932

THE CENTENARY MEETING

"A nine days' wonder" is something that causes a great sensation for a short time and then passes into the limbo of things forgotten. The nine days of the wonderful Centenary Meeting, that opened on July 21st and closed in the small hours of July 30th, will not soon fade from recollection. A general verdict was delivered a week ago in the leading newspaper: "No more successful conference of the British Medical Association than that which came to an end yesterday has been held. . . . Never has the Association been more closely in touch with the life of the profession which it represents or with the public which it serves." Every circumstance—except the wicked weather—combined to make this great professional gathering an event without parallel. When we recall the scale of the arrangements it is astonishing that all went as planned, and that apart from a momentary storming of the ticket counter on Monday afternoon no hitch occurred from first to last. Only those who have essayed the task can realize the amount of work that goes to the preparation of an Annual Meeting or the exertions undergone by those responsible during the nine days for the actual working of the elaborate machinery which has been laid down beforehand. How much heavier, then, the burden of a centenary celebration in which more than 4,000 members took part.

For the triumphant success of the hundreth birthday party many people have deserved the thanks and congratulations of the Association at large. The hosts were the Metropolitan Counties Branch, and their unanimous choice for the Presidency was Lord Dawson of Penn. It is safe to say that if a plebiscite of the whole Association had been taken on who should be its titular head this year the result would have been the same. Lord Dawson accepted the honour in the spirit in which it was offered and threw himself wholeheartedly into the duties of that high office. Beside him, as a working partner alike in the business and in the ceremonies, stood Lady Dawson, and the grace with which she adorned every public and private occasion won the hearts of all. Grateful acknowledgements have been earned by a large number of others who had toiled for months with one end in view. "He who praises everybody," said Johnson, "praises nobody." True enough, but it seems invidious to single out a few names from among so many that deserve recognition. Yet mention must be made of the exceptional services of Dr. Worley, who carried an immense load as organizing secretary; of Sir Basil Blackett's work as treasurer for the meeting; and of the work of Mr. Souttar and Dr. Goodbody, Mr. Stratford and Dr. Spurgin, Dr. Hawthorne and Mr. Comyns Berkeley, Sir Crisp English and Dr. Aydon in executive posts of much responsibility. The Ladies' Section was admirably organized, and if we name the President's wife and Dr. Christine Murrell and Miss Elizabeth Souttar we know they will protest that this very important part of the machine ran smoothly because of the fine team spirit of their various subcommittees. As for the Scientific Sections, twenty-four in number and all of them with heavy programmes, the distinguished officers of these would wish note to be taken of Dr. Gardiner-Hill's efficiency, as science secretary, in co-ordinating their efforts. Lastly, credit is due to Sir Arthur Keith and Mr. Mitchiner and Dr. Oliver for arranging a valuable museum, which rounded off the work of many of the Sections. As Sir Henry Brackenbury told the Representative Body on July 21st, a large team of voluntary workers behind the scenes had built up the success of the Centenary Meeting, and any thanks publicly given to a few outstanding individuals must be interpreted as gratitude felt towards all.

It was during the last Annual Meeting in London that King George consented to become Patron of our Association in succession to King Edward. On this occasion the Prince of Wales paid us the compliment of attending the Brobdingnagian banquet in the Albert Hall as the chief guest of honour, and he prefaced his fine tribute to the work of the doctor with a message of congratulation and good wishes to the Association from the King and Queen. His Royal Highness's speech is reported in full in our *Supplement* this week. As the President had done in his memorable address two days earlier, the Prince voiced the feeling of every member of the Association at home when he welcomed the presence of so many visitors from the Dominions and delegates from foreign countries. Indeed, all the major events in the Centenary celebrations had a world-wide air. Members from far and near took part in the pious pilgrimage to Worcester in honour of the Founder, and attended the presentation to Dr. Alfred Cox, whose impending retirement lent the only note of sadness to a week of rejoicing. The Representative Body, which met for four days under the expert chairmanship of Dr. Le Fleming, greeted an unusual number of oversea members and gave them opportunity for a special conference at headquarters. Nor must we forget that in this centenary year the British Medical Association has honoured itself by conferring honorary corresponding membership upon twelve foreign medical men of the highest distinction.

In a sparkling contribution to one of the Sections last week, Dr. Hutchison complained that the professional journals of to-day are far too numerous and far too dull. We think a good answer could be given to the second charge, in support of which he quoted, from *The Wrong Box*, Michael Finsbury's dictum: "Nothing like a little judicious levity." As for the first charge, opinions may differ, but all will agree that medical life

and letters would be enlivened and enriched by one more periodical, "The Medical Wrong Box," if this were in the hands of Robert Louis Stevenson's fellow countryman and kindred spirit, Robert Hutchison. How gladly would we leave such a journal to distil all that was best and brightest from the scientific proceedings of twenty-four Sections, and to chronicle in light vein the social side of a meeting which had been so lavishly planned that the excursions and visits and parties of every kind numbered not far short of 200! Our reports of the Sections begin to-day, and some account of the larger functions will be found in this and later issues; but even the briefest description of all the entertainments would occupy far more space than could possibly be spared in a journal whose primary object is scientific. We must therefore be content with a comprehensive expression of thanks on behalf of their guests to the many individuals and corporations and business firms whose generosity helped to make the Centenary Meeting for ever memorable in the annals of the British Medical Association.

EPIDEMIC ENCEPHALITIS

The reported new cases of encephalitis lethargica in the British Isles have been steadily decreasing in number during the last few years—from 5,039 in the peak year of 1924 to 654 in 1931. The output of literature on the subject has also declined during the same period, and some evidence of this decrease in both incidence and interest is afforded by the second report on epidemic encephalitis of the team of ten American investigators known as the Matheson Commission. We had occasion to refer, in a leading article in the *Journal* of February 15th, 1930, to the Commission's first report. That report embodied the results of a survey, undertaken by members of the Commission, of the literature of the disease with particular reference to its aetiology, epidemiology, and treatment, while half the volume was devoted to a bibliography which carried the survey of the literature up to the third quarter of 1928. The present report,[1] a much shorter document, deals with the same aspects of the disease; but, although published in 1932, it carries the literature no further than the end of 1929. The Commission, as far as its researches go, finds nothing essentially new to report on the nature of the infection, and concludes that "the question of the aetiology of epidemic encephalitis is still unanswered." For information about the epidemiology of the disease throughout the world the Commission has again availed itself of the periodical bulletins issued by the League of Nations in its monthly epidemiological reports. The outstanding events here are the periodical and serious outbreaks of epidemic encephalitis which have occurred in Japan: in 1924, 6,551 cases; in 1926, 1,012 cases; in 1927, 990 cases; and in 1929, 2,058 cases. In each of these epidemics the fatality rate was considerably over 50 per cent.

As in the first report, the various drugs and other agents which have been tried in the treatment of the disease are scheduled alphabetically, and for each form of therapy tabulated details are given on the number of references in the literature and the number of cases treated, together with information as to the stage of the disease and the result of the treatment. Several drugs and therapeutic methods mentioned in the first report have dropped out of the second, while a few others, with scanty references, have been added. The only drugs still spoken of favourably, when used for palliative purposes in certain phases of the chronic condition, are atropine and its derivatives, bulbocapnine, hyoscine, scopolamine, and stramonium. The divergence of opinion abroad about the methods of treatment is exemplified by the different doctrines of two such experienced observers as Economo and Stern. Thus, whereas Felix Stern considers convalescent serum to be the most efficacious and enduring remedy, the late von C. Economo, in one of his last publications, questions the rationale of convalescent serum on account of the chronicity of the disease, and puts his faith in the intravenous administration of big doses of iodine both for acute cases and for Parkinsonism. It does not appear from the literature that either of these two clinicians has many disciples in this country. For the strange oculogyric crises, as for other spasmodic manifestations of post-encephalitis, McGowan and Cook found that the atropine group of drugs gave the best result.

The report contains a reference to the literature on post-vaccinal encephalitis, and quotes the peculiarity noted in the League of Nations Epidemiological Reports that this complication is chiefly found, not in countries where the proportion of vaccinations is high, but in countries where it is declining—these being chiefly England and Holland. The work of the Commission is evidently still inspired by its founder, the late Mr. W. J. Matheson, who died suddenly between the publication of the first and second reports. A further report is promised, and in this the Commissioners will give an account of the first-hand investigations of various kinds of treatment which they have been conducting at the Neurological Institute in New York.

[1] *Epidemic Encephalitis: Etiology, Epidemiology, Treatment.* Second Report by the Matheson Committee. New York: Columbia University Press; London: Milford, Oxford University Press. 1932. (10s. net.)

THE REPRESENTATIVE MEETING

The Representative Meeting, the full report of which is concluded in this week's *Supplement*, differed somewhat from those of recent years. It was not that it was held at headquarters, for the meeting of 1930, necessarily divorced from an Annual Meeting which travelled so far afield as Winnipeg, also took place in the Great Hall of the Association's House; nor was it only that its unique character as part of the Centenary Celebrations and certain consequent variations in the customary order of business lent to its proceedings something of a special atmosphere. It will be remembered also for other distinctive features. Oversea

representatives had this year for the first time their separate conference ; but the presence of a strong contingent made itself felt in the deliberations of the Representative Body, notably in Dr. Orenstein's vigorous intervention in the debate on medical patents, while Dr. Routley (Secretary of the Canadian Medical Association) appeared occasionally as a welcome visitor. In addition, throughout the proceedings the knowledge that this would be the last occasion on which Dr. Cox would take his accustomed place beside the Chairman as Medical Secretary of the Association was always present in the minds of representatives, while the absence of the familiar figures of Dr. Drever (of whose retirement Dr. Miller made sympathetic mention in presenting the report of the Scottish Committee) and of Dr. Todd of Australia, who had looked forward with such happy anticipation to participating in the Centenary Meeting of the Association he served so long and so well, could not but make itself felt, as did their presence in past years. The apology received from Dr. Fothergill, most constant of attendants in all places where occasion for debate can be found, caused a departure from precedents in the shape of a special message of sympathy and hope for a speedy recovery. Mention must also be made of the absence through illness of Sir Richard Luce, who has successfully guided the Hospitals Committee through a period of such importance in the development of the Association's Hospital Policy. Apart from the report of the Ethical Committee and more particularly its recommendations in respect of medical research and the patent law, of which more is said elsewhere, the most noteworthy feature of the agenda itself and the discussion of the various items of the Annual Report was the comparative absence of contentious matter and the consequent lack of those close and protracted discussions, both of principle and of detail, to which the Representative Body is accustomed. In the absence of controversy interest centred in the main on three reports—those of the Hospitals Committee and of the special committees on the relationship of the private practitioner to the treatment of mental disorder and on mental deficiency. The statement on the progress made in the promulgation of the Association's out-patient policy was received with general satisfaction, but the preponderant approval of the effect given to last year's decisions in the establishment of the Consultants List seemed to be tempered by reservations in some quarters. The warm reception accorded to Dr. Gordon's lucid explanation of the scope and objects of the report on the private practitioner and the treatment of mental disorder and Professor Berry's striking presentation of the report of the Mental Deficiency Committee illustrated the manner in which the Representative Body welcomes and utilizes the contribution which special groups can make to the shaping of professional practice as a whole and of public policy. It augured well for the influence of these very important documents upon the profession at large, and fully justified the labour and expense involved in their production. It is not without significance in connexion with these three reports that the Section of Medical Sociology has this year been occupied with a discussion of hospital problems, while the Section of Mental Disorder devoted one of its sessions to a debate on mental health and the general practitioner.

MEDICAL RESEARCH AND PATENT LAW

The question of medical patents has now been under consideration for three years, and the manner in which the Representative Body dealt with the report of the Ethical Committee on this matter emphasizes the fact, which was indeed in no sort of doubt, that the last word has not yet been said upon an extremely difficult and complex problem. The full report of the debate at page 61 of last week's *Supplement* may be commended to the attention of all members of the profession who would wish to secure a sound and statesmanlike decision on a troublesome issue. To appreciate its significance they should familiarize themselves with the contents of the Memorandum of the Medical Research Council, of which a detailed abstract was supplied at page 234 of our *Supplement* for May 21st, 1932, and with the arguments put forward in the correspondence on the subject which has appeared during the past few weeks and has been swelled since the Representative Meeting by a letter from Sir Ernest Graham-Little, published to-day. This is the more to be desired because the ultimate decision is of considerable importance to the community at large. It is by no means clear that even members of the Representative Body, who showed a keen interest in the general subject, fully appreciate as yet either the facts of the case or the exact bearing of the arguments advanced on one side or the other. In introducing the subject Dr. Lyndon explained exactly what he did and what he did not ask from the Representative Body at that time. He did not ask the meeting for a final decision on an important and controversial matter not yet fully discussed in the Divisions. He did ask it for an expression of opinion which might serve during the ensuing twelve months, and pending a definite decision of policy in this connexion, as a useful and indeed necessary guide to the Council. At a later stage, when it was explained that a conference between the various interests affected would be called in the near future by a Government Department, an additional reason for desiring such guidance became apparent. It is to be hoped that the information as to Continental practice and opinion in connexion with patents in the medical field asked for by Dr. Manson and not yet received will be made available through the Association Professionnelle Internationale des Médecins before that conference meets. The provisional decision reached on Friday, though it differed in form from the recommendation submitted by the Council (which was that the Representative Body " express the opinion " embodied in the several propositions agreed by the conference called by the Association), conceded all that Dr. Lyndon had asked by adopting " the report of the Council under the heading Patenting in the Medical Field " (which included the propositions under discussion), with its suggestions for the guidance of registered medical practitioners, and by asking the Council " to continue consideration of the subject "—a course which, in view of the forthcoming conference, the Council was clearly prepared to take. By accepting this motion and rejecting the proposition to send the report back for further consideration, the Representative Body would seem to have taken a definite step in advance along the lines suggested by last year's adoption of Sir Robert Bolam's motion.

L'ENTENTE CORDIALE MEDICALE

French medical men who visited London for the Centenary Meeting of the British Medical Association were entertained to lunch on July 27th at the Hotel Victoria by the Anglo-French Luncheon Club. Sir StClair Thomson, president of the Section of Oto-laryngology, was in the chair, and welcomed the guests in a charming and witty speech in their own language. He coupled the toast with the names of Dr. B. Weill-Hallé and Sir Henry Brackenbury, who both replied in felicitous terms. During the proceedings Dr. J. M. Le Mée announced amid great applause that the President of the French Republic had deputed him to confer on the chairman the Commandership of the Legion of Honour, whereupon he invested Sir StClair Thomson with the scarlet cordon and enamel pendant of the Order, in which he was already an Officer. Lady Dawson of Penn explained to the company that official duties at the Royal College of Physicians had alone prevented the President of the Association from welcoming in person its eminent French guests. She said how pleased Lord Dawson would have been to see his old and valued friend honoured in this way by France. In a modest acknowledgement, Sir StClair Thomson paid compliments to Mrs. Aubrey le Blond for her indefatigable work as honorary secretary of the Anglo-French Club in the interests of *l'entente cordiale*. The guests included Dr. Armand-Delille, Dr. A. Lacassagne, Dr. Dibot, Sir Holburt Waring, P.R.C.S., Dr. F. G. Thomson, Past President of the B.M.A., Mr. Comyns Berkeley, Sir Henry Simson, Sir Stanley Woodwark, Dr. Campbell McClure, and the Editor of the *Journal*.

RETURN CASES OF SCARLET FEVER

In a paper read before the first International Congress of Preventive Paediatrics last September, Dr. J. D. Rolleston[1] drew attention to the pioneer work done by British workers in connexion with this question, the importance of which they first emphasized nearly forty years ago. The earliest reference in the literature to return cases which he has been able to discover was a letter in the *British Medical Journal* of January 7th, 1893, by an anonymous medical superintendent of a hospital near London, who applied for advice on the subject. The term, however, seems to have been in current use in fever hospitals for at least five years previously. Several other letters appeared in the *Journal* in the course of the next few months from medical superintendents of fever hospitals, who maintained that the occurrence of return cases was not due to negligence on the part of the hospital authorities, but to inadequate disinfection of the bedding, clothes, and other articles in the homes of scarlet fever patients after their removal to hospital. As several complaints were brought against the Metropolitan Asylums Board for premature discharge of patients, that body formed a subcommittee to report on the question in 1895, and in 1898 appointed the late Sir William Simpson, followed in 1901 by Dr. A. G. R. Cameron and in 1904 by Dr. F. M. Turner, to investigate the occurrence of return cases both of scarlet fever and of diphtheria. Although at the present time there is by no means agreement as to the effect upon the incidence of return cases of overcrowding, duration of stay or final segregation in an uninfected ward, or the presence of haemolytic streptococci in the throat or nose, there appears to be general agreement that discharges from the nose, throat, or ear are largely responsible for their occurrence, whereas desquamation is of little importance. In a Ministry of Health report on "Some administrative aspects of scarlet fever," which forms the most important recent British work on return cases, Dr. A. C. Parsons has illustrated the great variety in their incidence by the fact that in eleven different provincial hospitals during the period 1913–22 this rate ranged from 0 to 6.9 per cent. Dr. Rolleston's own experience of return cases does not bring any new facts to light, but merely serves to confirm the principal conclusions of his predecessors as regards the unimportance of desquamation, the frequency of rhinitis among the infecting cases, the higher incidence of return cases in the cold season of the year, the ages of the infecting cases (the majority being between the ages of 8 and 10 years), and the greatest frequency within the first fortnight after the patient's discharge from hospital.

[1] *Brit. Journ. Child. Dis.*, April–June, 1932.

METABOLISM OF THE FROG'S HEART

A series of three papers by Professor A. J. Clark and his collaborators, appearing in the current number of the *Journal of Physiology*, throw much light on the fundamental aspects of the metabolism of the heart. The problem under examination was that of the types of foodstuff utilized by the frog's heart, and the factors which influence such utilization: the technique used was both physiological and biochemical. No one can question the value to medicine of accurate information about the heart's metabolism. The frog's heart being small, and capable of prolonged survival apart from the animal, allows of observations being made which would be far more difficult—perhaps impossible—in the case of the mammalian heart. It offers the further advantage that its metabolic processes are carried on at a low temperature and are relatively slow; they are therefore easier to observe than those of mammalian tissues. Its size, on the other hand, makes difficult the task of estimating accurately minute amounts of such substances as carbon dioxide, carbohydrates, lactic acid, fat, urea, and ammonia. Only those who have themselves essayed such a task will fully appreciate the labour and the periods of uncertainty and disappointment involved in such an undertaking. To appreciate fully the material set forth in the papers referred to, the reader must turn back to an earlier publication by Clark, Gaddie, and Stewart,[1] in which the methods are described in detail. The authors present evidence which enables them to draw some important conclusions. In the first place, having measured the oxygen consumption of the heart and its respiratory quotient, they were able to show that, over a period of twenty-four hours, apparently not more than 15 per cent. of the total energy output of the heart could be accounted for by oxidation of carbohydrate, and that during the first six hours of perfusion no carbohydrate seemed to be used at all. Under rather

[1] *Journ. of Physiol.*, 1930, lxxii, 443.

special conditions (perfusion with heparinized blood plus insulin and glucose) the amount of carbohydrate burned might rise to 40 per cent. of the total metabolism. The values obtained for the respiratory quotient were in accordance with these observations. Carbohydrate, then, contributes but a small proportion of the heart's total fuel. The nature of the materials from which the balance is drawn is still uncertain. There is no evidence, direct or indirect, that fats are used. Both ammonia and urea are formed by the heart, which fact is strong evidence for the utilization of protein ; but, even so, only about 50 per cent. of the total energy output can be accounted for. Certain amino-acids can be used, for the addition of glycine or leucine affects both the value of the respiratory quotient and the output of nitrogen. In the first of the three papers just published[1] the same authors report the results of a fresh attack on the problem of the heart's carbohydrate consumption. They have brought to light the surprising fact that during perfusion the heart manufactures reducing carbohydrate from some non-carbohydrate source. This discovery enables them to refer some 40 per cent., instead of 15 per cent., of the total oxygen used to the oxidation of carbohydrate, and so to account, in all, for about 76 per cent. of the total fuel. Inositol, that curious cyclic carbohydrate which occurs in many tissues, including heart, is shown to bear no part in the metabolic processes. It has been known for some time that the frog's heart is capable of prolonged activity in the absence of oxygen. In the second paper[2] Clark, Gaddie, and Stewart show that this power of anaerobic activity depends on at least two factors. First, the heart must have available a supply of carbohydrate. Its own intrinsic store will serve, and this can be supplemented by glucose supplied in the perfusion fluid. In the presence of oxygen, carbohydrate seems to play but a minor part ; when oxygen is removed (or even when the oxygen supply becomes rather poor) it at once assumes importance. It is not, of course, burned in the absence of oxygen, but its conversion to lactic acid, which is an anaerobic process, provides the energy necessary for the heart-beat. But it is not enough that lactic acid should be produced. Its production yields energy, but its actual presence is injurious, and unless it is quickly removed the organ ceases to beat. The most important factor influencing the rate of removal seems to be the reaction of the perfusing fluid. A perfusion fluid of *p*H 8 or over permits the " anaerobic " heart, supplied with carbohydrate, to beat for many hours ; an acid or neutral perfusion fluid permits lactic acid to accumulate in the organ, as a result of which it quickly dies. In the third paper[3] the analysis is carried still further. It has been known for the last two years that the *immediate* source of the energy of contraction of skeletal muscle is not lactic acid, but creatine phosphoric acid (" phosphagen "), which breaks down, and is in turn resynthesized, by virtue of the energy yielded by lactic acid production from carbohydrate. Creatine phosphoric acid occurs in the heart in small quantities, but in amounts which calculations, based on heat and energy values, show to be sufficient for it to play a part similar to that which it plays in striated muscle. With an adequate oxygen supply, the heart uses non-carbohydrate substances to resynthesize phosphagen after each contraction, and so prepare the heart for the succeeding beat. If oxygen is absent, then phosphagen resynthesis can be carried out only at the expense of breakdown of carbohydrate to lactic acid. If this process be checked, as it can be by the addition of monoiodacetate to the perfusion fluid, the heart stops within a few beats, to be revived again by the admission of oxygen (which permits the use of non-carbohydrate stuffs), provided the ventricle has not been allowed to go into rigor. Thus have physiology, biochemistry, and the use of a drug with a specific action on an enzyme system, together contributed to the analysis of a biological problem. These results have been obtained through the use of the frog. It is improbable that they can be transferred in their entirety, and with no modification, to the mammalian heart ; but we may feel certain that the processes in the warm- and the cold-blooded organism, if they differ at all, will differ in degree and detail, and not in fundamentals.

[1] *Journ. of Physiol.*, 1932, lxxv, 311.
[2] Ibid., 1932, lxxv, 331.
[3] Ibid., 1932, lxxv, 332.

PROFESSOR GRAHAM LUSK

The science of physiology has suffered a severe loss by the death of Professor Graham Lusk, professor of physiology in Cornell Medical College, New York. He was an international authority on metabolism and nutrition—an outstanding representative of a type that is becoming rarer and that science can ill afford to lose. The great pioneers in any science are usually characterized by their broad philosophical view of their subject, but this tends to be lost by their successors, who become entangled in the mass of intricate detail which so rapidly accumulates as a science develops. Lusk was trained under Carl von Voit, who had been a pupil of Liebig, and he managed to preserve something of this pioneer vision. It gives his classical work, *The Elements of the Science of Nutrition*, an especial value, for breadth of view is of particular importance in such a science as nutrition, which is so intimately associated with the general life of communities. Not only did Lusk do much to advance knowledge of nutrition, but he also applied the basic principles of his science to practical needs. He was one of a small commission, appointed by the Allies in 1917, to advise on the principles to be adopted for feeding Great Britain and other countries threatened with serious food shortage. This was one of the most urgent practical problems in nutrition that ever required solution, and any mistakes would have entailed most disastrous consequences. The commission was successful, and this country in particular owes much to its work. Professor Lusk was the recipient of many honours from scientific bodies in Europe and America. He was Sc.D. of Yale, LL.D. of Glasgow, and M.D. of Munich, and was recently elected a foreign member of the Royal Society.

We regret to announce the death of Emeritus Professor Matthew Hay, M.D., LL.D., who was for many years medical officer of health for Aberdeen and professor of forensic medicine and public health in Aberdeen University.

CENTENARY MEETING

OF THE

British Medical Association

HELD IN LONDON, JULY, 1932

THE SECTIONS

SUMMARY OF PROCEEDINGS

During the next few months there will be published in the *British Medical Journal* the opening papers communicated to the Scientific Sections of the Centenary Meeting. The summaries of discussions in this and successive issues are intended to give members who were not present a general idea of the proceedings.

SECTION OF MEDICINE

Wednesday, July 27th

INTRODUCTORY REMARKS BY SIR HUMPHRY ROLLESTON, PRESIDENT OF THE SECTION

In this centenary year it is natural to look back for a few minutes to inquire when the present Section of Medicine was first established. At the first meeting of the Association in London in 1862, which was held under the presidency of Sir George Burrows in the house of the Royal College of Physicians, there were not any Sections. In 1865, at the Leamington meeting, there was a tendency to arrange the medical papers together, and at the Dublin meeting in 1867, under the presidency of William Stokes, Regius Professor of Physic in the University of Dublin, four Sections were for the first time established—in Medicine, Physiology, Surgery, and Midwifery—labelled, like the vitamins, A, B, C, and D. The president of the Section of Medicine was Robert Law (1799–1875), a distinguished graduate of Trinity College, Dublin, and Professor of the Institutes of Medicine, 1841–71. The secretary was William Moore (1827–1904), King's Professor of the Practice of Medicine, 1869–82. It appears that the Sectional proceedings were on this occasion somewhat interrupted by adjournments to hear the more important papers read before the whole Association. The proceedings of the Medical Section were then opened by the President of the Association, William Stokes ; and to-day our President—Lord Dawson of Penn—would, had it been in any way possible in this week of his multifarious engagements, have followed this example on the occasion of this centenary. But as also President of the Royal College of Physicians of London he is absolutely obliged to preside at the College this morning, and has therefore sent a gracious message of good wishes to this Section, of which he has twice, in 1925 at Bath and in 1930 at far distant Winnipeg, adorned the chair.

RECENT WORK ON BONE DISEASE

Professor EDWARD MELLANBY (Sheffield) opened a discussion on the clinical applications of the recent work on bone disease. Recent advance in our knowledge of bone disease had depended on two main lines of investigation: dietetic and environmental factors, and the parathyroid glands. The structure of bone was the outcome of a struggle between factors tending to produce perfect bone formation and calcification—that is, an adequate supply of calcium phosphate, phosphorus, and vitamin D—and those tending to produce a comparatively soft, partially calcified tissue. The foods stimulating calcification were milk, cheese, butter, egg yolk, and the fat of meat and fish. The chief foods hindering calcification were cereals—for example, bread, oatmeal, and rice. Foods such as lean meat and white fish stimulated growth without adequate calcification, and tended to produce defective bone formation. The demand for calcifying foods in the diet was greatest during growth and where cereals were the main constituents of diet. Cereals were the cheapest and most greatly consumed articles of diet, and the more these were eaten the less likely it was that sufficient milk, eggs, suet, etc., would be taken. In this country climatic conditions were such that the baneful effects of cereals were not counteracted by ultra-violet radiations. In childhood an unbalanced diet resulted in rickets ; in adolescence " late " rickets might ensue ; in the adult there might be osteomalacia. In advancing age gross bone deformity became rarer, but defective bone formation was much more widespread than was indicated by gross deformity. The fundamental method of preventing rickets was to increase milk consumption, especially by procuring breast-feeding by properly nourished mothers. Even so, many samples of human and cow's milk did not contain sufficient vitamin D, and for this reason a supplementary supply was desirable in all cases. Cod-liver oil was a specific against rickets, and as a prophylactic one to three teaspoonfuls daily was sufficient. No cereals should be given to any child for the first nine months of life, and only small amounts up to two years. Late rickets and osteomalacia could be cured by the treatment specific for rickets. The danger of producing D-hypervitaminosis was small if plenty of milk was given, but there was real danger if concentrated preparations were given to a child who was not getting reasonable quantities of milk and other food. The bone defects associated with parathyroid abnormality had attracted much attention, and would be dealt with by later speakers. In generalized osteitis fibrosa cystica the main findings were rarefaction of bone, high serum calcium, low plasma phosphorus, high blood phosphatase, and large calcium loss in the urine. The removal of the enlarged parathyroid had had some dramatic results. In osteitis deformans our knowledge was less complete, but there was clearly some aetiological relation with osteitis fibrosa. In addition to active bone absorption there was still a great tendency to recalcification, and the most satisfactory treatment was the encouragement of this tendency by giving a highly calcifying diet. Renal rickets was probably to be classed with osteitis fibrosa as due to the functional deficiency of some organ and not diet deficiency.

Professor L. G. PARSONS (Birmingham), in speaking of coeliac rickets, pointed out that lack of vitamin D alone did not necessarily produce rickets, and that even when there was no such deficiency rickets might result from impaired absorption. One factor of great importance was growth, without which rickets could not occur. Infancy was the time *par excellence* for rickets, but with deficient diet or defective absorption it might occur at any period of active growth. The outstanding feature in coeliac disease was the inability to absorb fat and the consequent loss of calcium in the stools. To this was added defective absorption of vitamin D. Coeliac disease was rarely to be diagnosed before the ninth month, so that if rickets occurred before that age it might well be independent of it ; but if it was only noted in the second year of life when coeliac disease was established this was probably the causal factor. The radiographic appearances of early cases did not differ from those of infantile rickets, but, as the disease developed, stunting or even practically complete

arrest might occur; under such conditions the rickets might heal with a fragile, atrophic, osteoporotic bone. The characteristic coeliac rickets, however, was a late rickets, occurring in Harris's second period of growth—that is, from the fifth to seventh year—and all grades of severity were seen, from a simple osteoporotic bone to one where calcium was so lacking that a radiogram was difficult to obtain. The clinical manifestations were genu valgum, with enlargement of the epiphyses at the wrist, and possibly a caput quadratum. The blood calcium was low, the phosphorus variable, tending to be low. In treating coeliac disease by a fat-free diet care must be taken to prevent coeliac rickets by giving ultra-violet radiation, or some form of vitamin D in as small an amount of fat as possible, tablets of irradiated ergosterol or ostelin liquid being particularly suitable. More recently the speaker had had satisfactory results from an irradiated dried yeast powder.

Dr. Izod Bennett described an investigation of a large series of cases of idiopathic steatorrhoea. The most prominent symptoms were: (1) Steatorrhoea: this might at the time of examination be only detected by chemical analysis, though there was invariably a history of recurrent diarrhoea. (2) Anaemia: this might be hypochromic, megalocytic and hyperchromic, or erythroblastic, with large numbers of nucleated red cells. (3) Tetany, sometimes only latent, with low plasma calcium due to failure of absorption or immediate re-excretion. (4) Infantilism, with bony changes varying from late rickets to true osteomalacia. The findings suggested some defect of absorption affecting the metabolism of fat, calcium, iron, vitamin D, and possibly other vitamins. Improvement might be obtained by regulating the fat in the diet and by giving large quantities of soluble salts of calcium, with radiostol, liver extract, or iron salts.

Dr. Hugh Barber (Derby) described the appearances found in renal rickets. This was not really a rare disease. The first signs were often thirst with polyuria, urine of low specific gravity, and an occasional trace of albumin. The urea in the blood rose, and radiographic evidence of rickets was present before clinical deformities were obvious. The bony deformities usually developed between 9 and 14 years of age, genu valgum being the chief disability, and there was considerable dwarfing of stature. There was a tendency to a low blood calcium and there might be tetany. The kidney as a rule showed a primary interstitial nephritis. It was invariably fatal. Professor H. A. Harris described the bone changes seen in scurvy. In children, as a rule, the bony changes were predominant, with haemorrhages into the intestine and gums a secondary phenomenon. In adults the haemorrhages into the gums and muscles were usually the early signs; this might be due to the blood supply. Repair was probably very rapid. A series of lantern slides demonstrated the differences between scurvy and rickets. In scurvy there was much denser calcification at the end of the bones than in rickets, and radiograms showed window-like spaces that were very characteristic. In scurvy the failure in bone formation was accompanied by a failure in blood formation very much greater than in rickets. The appearance of a circle at the centre of the epiphysis was taken by some to be evidence of scurvy, but in fact it merely indicated arrest of growth, which might occur in many conditions—for example, pneumonia. Syphilitic epiphysitis might be detected *in utero* by the irregular jagged epiphyseal line. Dr. Donald Hunter (London) discussed the association of hyperparathyroidism and generalized osteitis fibrosa. He recalled Collip's experimental work showing that total thyroparathyroidectomy in dogs caused severe tetany, relieved by injections of parathyroid hormone, and that prolonged use of these injections in man caused a rise in serum calcium, and an increase in the calcium output in the urine. In 1929 a patient was found with generalized osteitis fibrosa, with high serum calcium, and a urinary calcium output six times the normal. No swelling was palpable in the neck, but Walton, at operation, discovered and removed a parathyroid tumour with cure of the symptoms. General symptoms often found were: polydipsia, polyuria, renal pain, haematuria, anorexia, nausea, vomiting, and amenorrhoea. In focal osteitis fibrosa serum calcium was normal, and there was no evidence of hyperparathyroidism. Mrs. Mellanby (Sheffield) said that a healthy set of teeth was essential to healthy digestion, that the structure of the teeth and caries were intimately related, and that therefore it was important in the early years to prevent hyperplastic teeth, thus preventing caries and the diseases depending on bad teeth. Professor Kay (Toronto) emphasized the importance of phosphorus in bone disease, and suggested that the intestinal factor should receive more attention. Dr. Robert Hutchison said that two types of bone disease had been discussed—bone disease proper, as osteitis fibrosa, and bone disease secondary to other conditions, as some failure in the intestinal tract such as coeliac disease. Professor J. C. Collip (Montreal) thought that too much emphasis had been laid on the difference in species response to parathormone. It had recently been found that if given in excessive amounts in rats it produced osteoblastic activity, thus acting as a growth hormone.

Dr. S. Levy Simpson gave a demonstration of the effect of injections of cortical extract of suprarenal gland in Addison's disease. In one of his first cases the patient had no longer any need for injections.

SECTION OF SURGERY

Wednesday, July 27th

Removal of the Prostate

At the opening session, with the President, Lord Moynihan in the chair, Mr. Swift Joly introduced a discussion on removal of the prostate. After discussing the indications for the operation Mr. Swift Joly gave a concise account of the pre-operative examination and preparation. His paper was printed in last week's *Journal* at page 192.

Mr. Henry Wade (Edinburgh) said that the proportion of cases requiring the two-stage operation amounted to 25 per cent. in general. This fact showed that many patients arrived for operation broken down in health and with seriously damaged kidneys. This was an unsatisfactory state of affairs, and in considering the reason he mentioned the popular lay conception of the disease and also the varying advice of medical men. The prostatic problem was essentially renal, and the general effects of damage to the excretory organs must not be lost sight of. The speaker pointed out that the presence of prostatic disease was undoubtedly often overlooked, particularly the more subtle changes in every organ and tissue of the body. The secondary effects manifest in the brain, the heart, and the gastro-intestinal tract were considered. To the patient the prostatic problem was mainly local. The medical man must view it as an ailment affecting the body generally. Enlargement of the prostate as a contributing factor to ill-health was very often overlooked. Recently Randall of Philadelphia had given accurate proof that this was a fact. In order to determine when surgical treatment was indicated, careful details were essential and accurate investigation of the health of the patient in a nursing home or hospital. Though examination of the rectum gave valuable information, cystoscopy, in the speaker's opinion, should be carried out as a routine in

every case. He recommended strongly the use of excretion urography in doubtful cases in order to visualize the degree of dilatation of the renal pelvis or ureters. The amount of residual urine could be seen graphically, and by estimating the amount and rate of excretion of the drug a valuable record of renal function could be obtained. It was dangerous to employ this method where the renal function was seriously impaired from severe backward pressure or intestinal obstruction. When organic obstruction to the outflow of urine was revealed at the vesical outlet operative treatment was indicated. Referring to the methods of prostatectomy, Mr. Wade said that the suprapubic route was the method of choice. A clear case could be made for perineal prostatectomy when the lateral lobes alone were involved, but for intravesical hypertrophy, where the internal sphincter was stretched and deformed, the ideal method was the suprapubic. The speaker referred to the rapid advance in the field of transurethral prostatectomy. At the recent congress of the American Urological Association it was shown that in suitable cases this method gave good results. Transurethral prostatic resection was a method reserved for the experts and its casual use was very dangerous. It would never supplant prostactectomy by the open method.

Mr. KENNETH WALKER's introductory paper on the sequelae of suprapubic prostatectomy was published last week at page 196. In it he thoroughly reviewed the causes and prevention of suprapubic fistula.

Dr. DE QUERVAIN (Bern) said he performed his first prostatectomy twenty-seven years ago, and had had the opportunity of following the development of the problem. Old men, even after 80, stood the operation well, since those with bad hearts and kidneys were usually eliminated between 60 and 70. The younger surgeons were operating earlier in the borderline cases than older surgeons, who were themselves in the prostatic age. He was of the opinion that with some restriction the younger men were right. Every case should be considered as a whole, and careful examination, especially of the kidneys and heart, was imperative. Referring to renal function tests, he said that though the blood urea might be normal the fluid excretion and concentration curve might be poor. He himself opened the bladder by puncture and dilatation, the puncture being made near the top of the bladder to avoid permanent fistulae. For control of haemorrhage he preferred the introduction of a small tampon into the prostatic cavity, held by extension of a linen thread passing through the urethra. This was removed the following day. The results of the later after-treatment depended mainly on the success in dealing with the infection. The most difficult problem was treatment of the fibrous prostate. Of late he had tried with success the excision of the central portion of the prostate with a narrow diathermic wire loop. Further experience would show if the diathermic loop was the way of progressive technique, as American surgeons believed. Dr. W. MCADAM (Leeds) said that the question which interested him had been the upward spread of infection. Many of the deaths after operation had been described as uraemia, but most of these he believed were due to sepsis. A method of estimating the resistance of a patient to infection would have great practical value in choosing cases. The speaker had estimated the cholesterol in the blood in eighty-eight cases. In those with a high figure only one died, whereas in those with a low figure sixteen out of eighteen succumbed. About 50 per cent. with a low blood cholesterol were clinically bad operative risks. He admitted that the method had its limitations, and carcinoma and arteriosclerosis gave a high figure, but even making due allowance for these cases the estimation of blood cholesterol was an important index of resistance to infection.

Sir HENRY NEWLAND said that he only desired to touch upon a few points of technique. He opened the bladder as high as possible, and endeavoured to strip the peritoneum from the fundus in order to do so. He was opposed to the insertion of any mechanical device to keep the prostate cavity open. The important point was to ensure free escape of the blood-stained urine through whatever drain was employed. With regard to the reconstitution of the prostatic urethra, he did not think Dr. Harris of Sydney really achieved this. He had seen Dr. Harris operate, and he did his operation with great skill. His own opinion was that the urine softened the catgut sutures so that they became soft like vermicelli, and the mucosal flap from the trigone inevitably retracted. Professor A. FULLERTON (Belfast) said that from his experience the safest operation was the simplest and shortest. He had adopted certain details in operating which increased the comfort and safety of the patient. The method of opening the bladder distended with a small amount of fluid by a small transverse opening which could be stretched enabled the patient to be kept dry, or almost dry, after the insertion of a De Pezzer catheter. Flushing of the prostatic cavity and bladder through the urethra by means of an enema syringe inserted into the meatus was an excellent method of irrigation. Referring to the complications of the operation, Professor Fullerton said that he favoured the use of a haemostatic bag of a globular type. The spread of sepsis to the kidneys could be controlled by adequate and prolonged drainage and irrigation. It was important never to distend the bladder while sepsis existed. Pericystitis could be prevented to a certain extent by keeping the wound dry. The method of irrigation described helped to prevent vesiculitis. Ligature of the vas, in his opinion, was of little use. He said that in the treatment of vesiculitis after a lapse of some weeks massage was useful, but its employment at an early date was thought to be unwise, owing to the risk of embolism or dissemination of infection. Urethritis could be controlled by washing out the urethra around the indwelling catheter. In cases of secondary haemorrhage the haemostatic bag should be inserted immediately. The speaker next considered incontinence: this was, as a rule, only temporary, and the use of a pear-shaped haemostatic bag was to be avoided on this account. He had had only one death from pulmonary embolism following prostatectomy, and he attributed this to the minimal disturbance of the parts concerned and the short time spent by the patient on the operating table.

Mr. CLIFFORD MORSON agreed with Mr. Kenneth Walker and Professor Fullerton on the question of vesiculitis complicating the operation. In 80 per cent. of the cases some degree of epididymo-orchitis occurred by spread from the infected vesicles. In his opinion secondary haemorrhage and excessive fibrosis at the bladder neck was due to recurring infection of the tissues of the prostatic bed, the culture medium being the seminal vesicles. From the experience gained during the last eleven years of performing preliminary division of the vasa deferentia he had proved that infection spread to the testicle by the vas only, either along its lumen or lymphatics in its wall. Furthermore, after division of the vas, there was no evidence to show that any change occurred in the testicle. Infection might spread from the seminal vesicles to the point of division of the vas months after the operation. The two contraindications to the operation were pre-existing orchitis and the presence of a large inguinal hernia. The technique of the operation was described. Latterly 4 c.cm. of a sclerosing fluid were injected down the proximal cut ends of the ducts to the seminal vesicles; this was an attempt to obliterate these cavities. Mr. Morson concluded by saying that no

patient need develop vesiculitis or orchitis after prostatectomy, and that division of the vas and injection of the vesicles was an essential part of the operation of prostatectomy. Mr. Terence Millin ventured to prophesy that in a very few years prostatectomy would be seldom called for. The perurethral endoscopic endothermic resection operation, which he had now used in fifty-four cases with but one death (and that in a malignant prostate with metastases), was proving very satisfactory, and in his practice was supplanting prostatectomy in 75 per cent. of cases. With a low mortality, and requiring only seven to ten days' hospitalization, it was, in his opinion, the procedure of choice in early cases, in the advanced "bad risk" case, and in many malignant prostates. A warning was necessary: it was essentially an operation for the skilled endoscopist, and promiscuous ill-advised use might well lead to unwarranted disrepute. Mr. McAdam Eccles said that early cases without complications were those which could be treated successfully by the general surgeon. Other cases of enlarged prostate could perhaps be left to the urinary surgeon. He suggested that the question of prostatectomy should be dealt with by the individual Divisions in the country during the coming winter. Medical men who had had their prostates enucleated—and if possible some patients too—should put before the meeting a short history of their condition before, during, and after surgical treatment. These statements would be very valuable and very illuminating. Dr. Powell (Montreal) emphasized the danger of estimating residual urine in the consulting room, owing to the risk of infection. He thought that the routine use of cystograms should be employed to include or exclude diverticula. Examination of apparently simple adenomatous prostates by serial sections had shown that the incidence of malignancy was more common than was usually realized. Professor D. P. D. Wilkie (Edinburgh) agreed that it was important to regard the patient as a whole in considering the advisability of prostatectomy. The risks of operations in other branches of surgery were increased by the general effect of the damage to the kidneys, particularly the effect on the heart muscle. In all men over 45 a possibility of insidious prostatism should be remembered.

Mr. Swift Joly, in reply, stated that the incidence of epididymo-orchitis was not as great as was stated, since a large number of patients suffered from changes in the testicles before operation. He did not think that perurethral prostatectomy had come to stay. There had been in the past waves of enthusiasm for this method, but it had always been discarded. Lasting permanent results had not been obtained, and he believed that it was wrong in principle to remove partially any tumour, since it would continue to grow, and in the case of the prostate the obstruction would recur. Referring to recurrence of a prostate after prostatectomy, he had heard of one case in which this had happened three times, but such cases must be very rare. In an adenomatous prostate there were two planes of cleavage; recurrence might occur when enucleation had been carried out through the innermost layer, and some glandular substance then might be left behind. Mr. Kenneth Walker said that while the mortality of the operation remained in the region of 18 per cent. at general hospitals and 8 per cent. at special hospitals, patients would hesitate to have the operation. Soon, in early and suitable cases, perurethral diathermy would be extremely useful, but he did not think that it would do away with the operation of suprapubic prostatectomy. Lord Moynihan paid a tribute to his teacher, McGill of Leeds, who was the first to perform prostatectomy in Europe. As a dresser he had assisted McGill at a prostatectomy on April 24th, 1887. This surgeon finally devised an operation similar to the modern open method of prostatectomy.

SECTION OF OBSTETRICS AND GYNAECOLOGY

Wednesday, July 27th

Indications for Abortion

With the President, Mr. Comyns Berkeley, in the chair, the opening paper on the indications for the induction of abortion was read by Professor Beckwith Whitehouse (Birmingham). He pointed out that the subject was no new problem, that it was one which had exercised very deeply the minds of responsible people in earlier but not necessarily less enlightened civilizations. To-day in sexual matters the general public in Great Britain was being greatly influenced by current practices in Europe. They should therefore welcome the opportunity they had that day of discussing the professional position in relation to the altered conditions of life and the urgent problems which were continually being thrust upon them by the lay public. He was emphatic that the procuring of abortion was not always safe, even in experienced hands. The public were inclined to regard the procuring of abortion as a "small operation." Professor Whitehouse quoted figures to show the high relative incidence of septicaemia in cases of abortion. In the statistical report of the League of Nations on maternal mortality it was stated that "as a cause of maternal deaths abortion has become more important than delivery at term." Another aspect of the risks incidental to the procuring of abortion was the ill-health to which afterwards the mother might be subject. Much of this, he thought, might be due to the shock administered to the endocrine system, the sudden withdrawal of the ovarian and placental secretions having serious repercussions upon the other elements of the endocrine system. He felt that the notification of abortions could not be other than beneficial, and it would at least provide reliable information upon the medical indications for terminating pregnancy. In an analysis he had made he had found that the incidence of abortions to births worked out at 1 to 4.7. He did not think that the practice of illegal abortion was increasing in this country to the extent that some people believed. At the same time he had not the least doubt that pregnancy was nowadays being terminated for indications which would have been whole-heartedly condemned twenty-five years ago. Medical policy was fairly well standardized as to the "major" reasons for intervention. When, however, they considered the minor indications the word "standard" certainly had no place. The operation of procuring abortion in Great Britain was legal only in certain well-defined circumstances—namely, that it was done to save the life of the mother and that the seventh month of pregnancy had been reached. The major indications for the production of artificial abortion might be summarized as: (1) The toxaemias of pregnancy which did not yield to treatment (eclampsia, uncontrollable vomiting); (2) certain chronic diseases aggravated by pregnancy (diabetes, nephritis, tuberculosis, heart disease, malnutrition, and sometimes mental and nervous states); (3) obstruction of the passages owing to a constricted or a deformed pelvis or to scar tissue contracting the vagina. Professor Whitehouse gave an analysis of the indications for therapeutic abortion from figures supplied by British teaching hospitals in the form of a table. He pointed out the length and the diversity of the various indications cited. The minor indications were only justifiable if the health of the mother was taken into consideration as distinct from danger to her life. They were from the present standard of British law illegal practices, and it could only be the weight of medical and lay opinion that could change this attitude. He felt that it was very difficult to generalize, and probably the fit and proper person to decide when a pregnancy should be terminated

in the absence of gross organic disease was the family practitioner, who alone was in a position in a concrete case to assess with their true value all the arguments for and against intervention.

Dr. R. H. J. M. CORBET (Dublin) put forward the Catholic attitude towards abortion. The law recognized the foetus as an individual, therefore the doctor might not empty the uterus of a viable foetus. In hyperemesis the death of the foetus might occur quite early ; therefore the uterus might be emptied in certain circumstances. In carcinoma of the uterus a Wertheim's hysterectomy might be performed if thereby the case could be brought to a successful conclusion. What was morally wrong could not be scientifically right. Dame A. LOUISE MCILROY said that the medical aspect of abortion was not so controversial as the ethical. She described the cases where she had found induction of abortion necessary during the last ten years. Since the war the induction of secret abortion had increased enormously. The lay public was demanding abortion, and women were asserting categorically that pregnancies belonged to them and they could do as they thought fit. There was no shame now in the demand for abortion. The medical profession must decide where they stood in the matter. Her own attitude was that she reserved to herself the right to induce abortion in any case where the welfare of the mother demanded it, but she could not help feeling that in bringing about abortion she was committing homicide. She felt strongly that in cases of criminal assault they should be permitted to bring about abortion. She thought that in private practice abortion was more frequently induced than in hospital. She strongly upheld the rigidity of the present law. She was vigorously opposed to the practice followed in Russia.

Professor MUNRO KERR (Glasgow) said that the increase of abortion was not yet so great as to affect the death rate from puerperal sepsis, though it was becoming so. The danger was infinitely greater when abortion occurred in the later months of pregnancy, after the sixteenth week. He thought the present law gave them quite enough latitude. They should have no truck with Russian practices here. It was only on the very rarest occasions when it should be necessary to terminate pregnancy for hyperemesis. When the patient was very seriously ill he advocated abdominal or vaginal hysterectomy rather than the older meddling methods. Dr. B. DUNLOP thought he could draft a simple and satisfactory Bill—namely, that abortion should be legal on medical grounds and if the applicant had two children. Dr. J. E. STACEY (Sheffield) was opposed to the compulsory notification of abortion. He thought that where therapeutic abortion was necessary it should be accompanied by sterilization. He would be sorry to see any alteration in the law of this country. Dr. KATHLEEN VAUGHAN did not think that birth control and abortion were in the best interests of the race, which should always be above the interests of the individual. Dr. MABEL RAMSAY (Plymouth) agreed that induction should be carried out in rape cases. She advocated contraception against abortion. Dr. L. W. HEFFERMAN (Swansea) thought that the man who had the most experience in obstetrics was really the general practitioner. He did not agree that abortion should be notified. The doctor should have the right to terminate a pregnancy after rape. Dr. GRAY WARD (New York) said that in New York State there was a law enforcing compulsory notification of abortion, but he was not sure how far it was of value. The induction of abortion was very far from being a simple procedure. Dr. JOYCE NEWTON thought that the woman who had had a large family suffered much less in after-life from nervous imbalance. Dr. G. I. STRACHAN (Cardiff) was surprised to hear that medical opinion was tending towards increasing the indications for the induction of abortion. He thought that opinion was more in the other direction. Dr. JAMES YOUNG (Edinburgh) said that in social and economic matters the medical profession was really the servant of the State, but it was in their province to present the health aspects of a question. By refraining from emptying the uterus in severe cases of hyperemesis they might be guilty of bringing about the death both of the child and of the mother. Dr. ROBERT FOWLER (Melbourne) had always made it a rule that if there was any medical indication for abortion then sterilization should follow as a matter of course.

Dr. J. S. FAIRBAIRN said that the law as it stood was quite good enough. Their business was to secure natural function: he thought, therefore, that when they came up against social and economic questions they should follow the same rules. They should stick to their own jobs. They should not be called upon to decide whether a girl had been raped or not. Dr. WATERFORD held that moral considerations should not be allowed to endanger the lives of both the mother and the child. He thought the present grounds for abortion were sufficient and should be maintained. Sir EWEN MACLEAN (Cardiff) felt that the Catholic point of view on this question would prevent opinion going too far in the opposite direction. He thought that they were bound to express their views on questions like that of abortion. Professor MAHFOUZ BEY (Cairo) said that hyperemesis should be placed in another category from other indications, as it was of so much greater importance. Dr. BETHEL SOLOMONS (Dublin) thought that the ethical aspect must be considered as well as the medical, though in the truly medical cases the two were identical. The ideal method of induction in hyperemesis was by abdominal or vaginal section. Professor ELLUL (Malta) said that in Italy there was a strong feeling against the induction of abortion. Professor WHITEHOUSE replied briefly to many of the points which had been raised.

SECTION OF PATHOLOGY

Wednesday, July 27th

THE PNEUMONOCONIOSES

The President, Professor ROBERT MUIR, was in the chair when Professor E. H. KETTLE opened a discussion on the pneumonoconioses. He said that most of their recent and exact knowledge of the pathology of dust diseases of the lungs came from South Africa, and particularly from the intensive study carried out in Johannesburg. The investigations in South Africa, however, had been largely limited to silicosis, while in this country there were various trades and industries in which atmospheric pollution occurred, and in many of them silica was found only in minimal amounts or not at all. This raised a number of questions: Was silica the only form of dust capable of producing pneumonoconiosis. Must the silicon be present as silica, the dioxide of silicon, or was it dangerous when in the form of a silicate? Was the action of silica modified by the presence of other dusts, and if so was it by dilution, inhibition, or alteration of the action of silica? What action on the lung had non-siliceous dusts? He considered that medical experience was so conflicting and so poorly substantiated by definite facts as to be worth little in answering these questions. The continued presence of crystalline silica in the lung was followed by the gradual development of a characteristic fibrosis. Asbestos produced a similar change, although the type of fibrosis and its distribution differed from that produced by silica. The differences were probably due to the size of the asbestos particles. Other silicates and the non-siliceous dusts were held to be innocuous. But he found it difficult to believe that the ounces if not

pounds of foreign material which may be found in the lungs at post-mortem had had a negligible effect. He did not accept the evidence so far advanced as proving that one dust could be neutralized by another. There was abundant clinical and experimental evidence that silica enhances the proliferative power of the tubercle bacillus in the tissues. Silica alone might produce such extensive pulmonary fibrosis as to cause death from cardiac failure, but it was chiefly dreaded because of its association with tuberculosis. There was evidence to show that, as it dissolved, silica combined with protoplasm, converting it into particularly favourable pabulum for the growth of the tubercle bacillus. Professor Kettle's experience of human pneumonoconiosis was relatively small, but he was becoming more and more impressed by the importance of the infective element in this disease as it was seen in England. He had received lungs for examination from several cases of silicosis, but in few of them had he found what he regarded as pure silicotic lesions. On the other hand, he had constantly found fibro-caseous tuberculosis, often with a nodular distribution, but differing only in extent from the lesions of chronic tuberculosis encountered in ordinary hospital work. Some of these lungs contained a high content of silica, and he did not doubt that they were examples of something more than simple uncomplicated tuberculosis. South African workers had been fortunate in that their pneumonoconiosis had been concentrated in a small area, and it had been relatively easy for them to adopt uniform standards in their clinical and pathological diagnosis. Until they could arrive at satisfactory pathological standards they would not be in a position to take their part in that correlation of the clinical, radiological, and pathological observations which seemed to him to be necessary. He suggested that many of the questions raised might be answered by experimental interstitial or intratracheal inoculation of the various dusts.

Professor Leroy U. Gardner (Saranac Lake, U.S.A.) described the production of silicosis from the experimental point of view. The atmospheric concentration of dust was hazardous in proportion to the amount of "free" silica it contained. All dusts were not equally "inhalable," and those that were inhaled were not always retained. Dusts were removed by the air passages and by the lymphatic system. In experimental animals the lymphatics played the more important part because, since they swallowed their bronchial secretions, traces of dust would be found in the intestinal lymphadenoid tissue if excretion was along this path, and it was not found. The dust particles were concentrated by phagocytes, and this focalization was still more marked in the lymphadenoid system. The development of nodules was slow and the dust must be in contact with the tissues for some time before the characteristic lesion developed, and the lesion itself grew very slowly. Pressure and mechanical injury were not essential to the reaction in pneumonoconiosis. His experiments showed that the rate of reaction to quartz was directly proportional to the size of the particles. He illustrated his points with exceptionally clear whole sections of lungs from his experimental animals, which had been kept in a dust chamber, the times of exposure and the dusts used varying in the different specimens.

Professor M. J. Stewart (Leeds) demonstrated a series of lantern slides showing that in silicosis the nodules of fibrosis were rounded, discrete, and of a whorled character, and most pronounced in the upper portions of the lungs. In contrast the slides from cases of asbestosis showed a far more diffuse and irregular fibrosis, which in the earlier stages was definitely peribronchiolar. The hard, bright, brick-red lungs of the haematite miners presented a more complicated problem because of the variation in the silica content of different ores. Recent knowledge gained from asbestosis and siderosis should keep them alert to the possibility of other dusts producing fibrosis with different characteristics. At post-mortem healed or closed lesions were found in persons who had a short dust exposure followed by a long period without further exposure. A case of this kind showed nodules surrounded by dense collagenous capsules, which were wholly subpleural in distribution. The incidence of tuberculosis was significantly less high in asbestosis than it was in silicosis.

Dr. N. Tattersall (Leeds) discussed the radiological appearance of the lungs, and described four main groups: (*a*) sharply defined nodular—typically seen in true silicosis; (*b*) striate—after exposure to silicates, asbestosis being the most typical; (*c*) light mottling with increased striation—coal miners and coal trimmers; (*d*) coarse mottling, striation, and large dense opacities—underground workers with machine drills in coal and haematite mines and some coal trimmers. Professor Stuart McDonald (Newcastle) dealt especially with the relative immunity to silicosis of the coal miners in Northumberland and Durham, and pointed out how different the conditions were in that district from those found in such a coalfield as South Wales. He also referred to a group of cases occurring in a lead mine where drilling through rock containing much silica raised much fine dust. He demonstrated lantern slides of a case of acute silicosis. Dr. A. F. Sladden (Swansea) demonstrated tables and charts he had prepared showing the estimated amounts of silica actually found in lungs. Up to 0.3 per cent. of silica was associated with little or no fibrosis of the lung and was not disabling; with 1 per cent. there was more fibrosis and definite disablement; and over 1.6 per cent. there was still more disablement with progression to a fatal termination.

Sir Kenneth Goadby emphasized the diffuse distribution of the fibrosis in anthracosis and the nodular in silicosis, and also showed a chart bringing out clearly the greater amount of silica in the lung of a miner working on hard headings as compared with that of a miner working on anthracite alone. Dr. W. E. Cooke (Wigan) showed lantern slides of asbestos bodies and of other bodies found after crushing and digesting the lung. He also showed a table giving the composition of deposits from this digest and of the ash. Professor Arthur Hall (Sheffield) said that he wished to emphasize the importance of the rapid and simple method of producing the condition experimentally devised by Professor Kettle.

Professor Kettle, in his reply, said that Dr. Gardner's work must revolutionize some of our ideas on this subject, and added that the cases shown by some of the speakers added point to his plea for a clearer definition and standard of the constitution of dust lesions.

SECTION OF BACTERIOLOGY

Wednesday, July 27th

Prophylactic Immunization against Infection

The discussion on the immunological basis of prophylactic inoculation against bacterial diseases was opened by the President of the Section, Sir Almroth Wright. He compared the present conception of acquired immunity with that of former years, illustrating his remarks by pointing out ways in which the original Pasteurian decalogue could be criticized. He compared the relative merits of vaccination and natural disease in inducing immunity, and discussed ways in which the benefits of any immunological procedure could be assessed. He closed his remarks with a criticism of the judgement of statistical inquiries into the value of artificially acquired immunity.

Professor Major Greenwood began by pointing out how in certain types of infectious disease such as small-pox, typhoid fever, and measles an individual was rarely

attacked more than once ; whereas coughs, colds, and influenza attacked the same person over and over again. He described experiments with Pasteurella and Ectomella in mice—diseases which showed some analogies with the members of the above contrasted groups of human diseases. The general outcome of this work seemed to be that it was more important to improve the environment of animals than to try to make the herd insensitive to the diseases which threatened in that environment. If Sir Almroth Wright's method of pre-immunization against diseases of the enteric group had been available eighty years ago, and if this method of protection had been adopted instead of the reconstruction of water supplies and drainage, he doubted if many lives would, on balance, have been saved. When, however, it was not possible to improve the environment, pre-immunization was the main method of protection.

Dr. J. A. Arkwright's remarks were concerned chiefly with the antigenic content of vaccines. He said that bacteria were now known to consist of many different antigenic substances, and virulent were distinguished from non-virulent variations by their chemical antigenic content. Prophylactic vaccines must contain the antigens to which antibodies were desired, and must therefore be made from virulent strains or toxigenic cultures. Although it was not necessary that the antigen should be in a living state, different antigens varied greatly in the amount of heating or chemical action they would stand without deterioration in their antigenic properties. Oral administration of a vaccine containing antigen resistant to digestion was followed by antibody production in suitable cases, and this route had the advantage in ease of administration of a large quantity. Prophylactic vaccines should so far as possible be made from dead cultures of virulent bacteria or viruses.

Dr. A. Felix dealt with the immunological significance of O and H antigens. He pointed out that the clinical course of a case of typhoid fever showed a close correlation between the presence or absence of O antibodies, while there was no such relation to H antibodies. Similarly, the bactericidal action of serum was due to the O antibody only, and the presence or absence of H antibody was entirely irrelevant. Thus it would seem that the O antigen and O antibody were the sole important factors in the mechanism of anti-bacterial immunity. The biological function of the H antigen was unknown.

Dr. H. Schütze's contribution to the discussion was read by Professor J. C. G. Ledingham, and consisted of examples from experimental work indicating the principles which should govern the preparation of prophylactic vaccines. In the case of pneumococcal vaccines the culture employed must be a virulent one consisting of encapsulated cocci. For the Salmonella bacteria vaccines should be made from " smooth " strains. But not every vaccine depended for its potency upon the same type of antigen, for in the case of plague the efficacy of the vaccine was associated with a very heat-labile antigen present in the gelatinous envelope which developed round the bacterium when grown at higher temperatures. The types of antigen contained by a particular organism and their relative importance for prophylactic purposes having been established, the vaccine must be prepared in such a way that the effective antigens were produced in maximum amount and damaged as little as possible during sterilization.

Lieut.-Colonel H. M. Perry, R.A.M.C., discussed the application of recent conceptions of bacterial antigens to immunization against typhoid and paratyphoid fevers. In the preparation of army typhoid-paratyphoid vaccines it had been customary for many years to ensure by continual colony selection that organisms in the smooth phase only were employed. Although the trend of recent experimental work had been carefully considered by the Army Medical Service, it was not proposed to alter the present form of vaccine until it had been shown that a product at least as effective as the old vaccine was available. Confirmatory evidence of this could only be obtained by actual field experiences in endemic areas of the disease.

Dr. T. Madsen of the State Serum Institute, Copenhagen, dealt with vaccination against whooping-cough. The results of recent experience, he said, seemed to show that as a prophylactic measure injections of whooping-cough vaccine were of little value, but vaccine treatment was of benefit because the mortality among the vaccinated group of children was much less than in the non-vaccinated group. Dr. R. Hare discussed the problem of immunization with haemolytic streptococci. After reviewing the formation of different types of antibody, he came to the conclusion that of all the antibodies produced by the injection of vaccines bacteriotropins were most directly concerned with the processes of microbic destruction, and particularly the destruction of virulent organisms. Dr. T. Dalling described methods which were used for immunization against lamb dysentery, an infection of sheep caused by a bacillus closely related to *B. welchii*. Dr. H. B. Day discussed the relation between type and species immunity to pneumococci, and put forward the hypothesis that the species antigen is derived from the type specific. The discussion was concluded by Sir Almroth Wright, who put forward certain questions which had occurred to him whilst he had been listening to the papers. Why, he asked, must they have in vaccines particular chemical substances which were known to be constituents of virulent microbes? He was surprised that none of the speakers had brought forward evidence of the efficacy of therapeutic vaccination. There was need for experiments in treatment as well as in prevention. It had been said that in prophylaxis dosage was of little, if any, importance. But this could not be maintained for treatment, in which dosage should obviously be regulated by the severity of the infection.

SECTION OF DISEASES OF CHILDREN

Wednesday, July 27th

Pneumococcal and Streptococcal Peritonitis

With the President, Dr. G. F. Still, in the chair, a discussion took place on pneumococcal and streptococcal peritonitis. Mr. L. E. Barrington-Ward, in opening, dealt first with the mode of infection in pneumococcal peritonitis. He said that the genital passage was the most common source of infection, but it could not be the only route, since six out of twenty cases in his series were boys. The question of a blood infection was difficult to settle. In boys it was common to find more general signs in the abdomen, the upper part being sometimes affected, in contrast to the pelvic affection in girls. This favoured a blood-borne infection in some cases. An intestinal route had been favoured by some writers. Coming next to the question of diagnosis, Mr. Barrington-Ward outlined the main clinical features, emphasizing that the child often looked flushed, with some cyanosis, and the general appearances might suggest pneumonia. A leucocytosis of 15,000 to 40,000 with predominance of polymorphonuclear cells was constant. The diagnosis of this condition from streptococcal peritonitis was often difficult, but this was not of great importance, since the principles of treatment were the same in all cases of primary acute peritonitis. Diagnosis from appendicitis was more important, and in the early stages this was possible by a critical consideration of the history of the pain, which was always central, and the finding of maximum tenderness in the right iliac fossa in appendix cases.

Dealing finally with treatment, the speaker said that modern opinion seemed to be coming to the view that conservative treatment was best in the early and severe forms of the disease. Against operation it was urged that the process was really a septicaemia, and drainage could not be directed against any local process in the abdomen. The main point in favour of operation appeared to be the difficulty of diagnosis. If the diagnosis was uncertain, especially in males, a quick laparotomy under gas and oxygen was the safest treatment. Immediate steps must in any case be taken to combat the septicaemia. Typing of the organism followed by the administration of serum was urged. Blood transfusion was of value, and fluids must be given in adequate quantities, intravenously if necessary ; mercurochrome was also useful intravenously. Lastly, Mr. Barrington-Ward alluded briefly to streptococcal peritonitis, pointing out that the disorder differed only in being more serious. Operation appeared to be of no value, and the methods of combating septicaemia outlined above were the best lines of treatment.

Dr. J. C. Spence (Newcastle) spoke of the extreme rarity of the condition of primary pneumococcal peritonitis, and said that it was much safer for all practitioners to regard every case of acute peritonitis in children as due to an appendicitis. A special type of pneumococcal peritonitis occurring in cases of degeneration of the kidneys or nephrosis was of especial interest. About half the patients with nephrosis in childhood died of this condition, and it was probable that many cases of unexplained fever in nephrosis were examples of pneumococcal infection of the peritoneal cavity. Dr. Spence strongly urged laparotomy and drainage when this complication arose, since the outlook was not so bad as might be expected, and cure of the kidney condition followed in some instances. He pleaded for an open mind on the problems of aetiology, mentioned that the blood count did not help in diagnosis, and suggested that operation should be performed in all cases of primary pneumococcal peritonitis.

Mr. Seymour Barling (Birmingham) presented the results of a study of twenty-three cases of pneumococcal peritonitis seen in the Birmingham and Midland Children's Hospital in the last five years. There were three groups of such cases: one group of overwhelming infection, one which contained cases simulating appendicitis, and a third where the symptoms were subacute or chronic. In the last there was common agreement as to drainage, and five out of six cases recovered. In the acute diffuse cases he thought it wiser in the early stages to postpone operation until some localization of the infection occurred. In the acute diffuse type the infection appeared to arise from the blood stream, and at operation it was striking how widely spread was the pathological exudate present. He could not agree that the diagnosis was always possible on a critical review of the history, and hence non-surgical treatment was always dangerous. Dr. A. G. Maitland-Jones described his experiences with pneumococcal peritonitis, which went to support the theories of McCartney and Fraser. Three male cases in his series were probably secondary. He stressed the amount of constitutional disturbance present in this condition, which was out of all proportion to the length of time the child had been ill. As regards treatment he thought that early operation was the safest procedure. Dr. A. T. Bazin (Montreal) spoke of the indications for operation in pneumococcal peritonitis, pointing out that this was primarily to be carried out to relieve tension of fluid within the abdomen and so prevent toxic absorption. Dr. P. B. Weill-Hallé (Paris) spoke of the occurrence of the condition in France, mentioning the frequency with which positive blood cultures were obtained in pneumococcal peritonitis. He stressed the occurrence of diarrhoea as an early symptom, and pleaded for an attempt at exact diagnosis so that medical treatment could be instituted. Dr. A. Goldbloom (Montreal) described his experiences with peritoneal puncture, which could be safely carried out with an ordinary hollow needle. Mr. R. A. Ramsay said he had seen few cases in which he dared not operate because of the difficulty in diagnosis. He mentioned the use of the fixation abscess as a method of dealing with the general septicaemia. Dr. Helen Mackay spoke of a small epidemic of streptococcal peritonitis in young babies, stressing the difficulty of distinguishing between simple distension and peritonitis. Dr. B. Schlesinger mentioned a case where serum had not helped.

Congenital Abnormalities of the Urinary Tract

Mr. R. Ogier Ward read a communication on modern methods in the recognition and treatment of congenital abnormalities of the genito-urinary tract. He illustrated how excretion urography and pyelography helped in the recognition of congenital malformations of the ureters, kidney, and urethra, and pointed out how any case of persistent infection of the urine ought to be carefully examined in this way. He mentioned a case where presacral neurectomy had relieved a case of dilatation of the ureters.

Preventive and Clinical Medicine

Dr. R. H. Crowley presented a paper on the relation of preventive and clinical medicine in reference to children. He dealt with the application of the new spirit of preventive medicine to some of the special problems of paediatrics. The discovery of the early stages of disease by the school medical service was not enough unless treatment in these early stages could be effectively obtained, and he pleaded for a reorganization which would lead to some sort of unified system for the sake of the child, whereby, for example, the family practitioner acted as a member of the public health staff as regards the health of the child.

SECTION OF COMPARATIVE MEDICINE

Wednesday, July 27th

Menstrual and Oestrous Cycles

With the President, Professor F. A. E. Crew, in the chair, Dr. S. Zuckerman opened a discussion on the menstrual and oestrous cycles. He pointed out that the problem of the homology of the menstrual cycle was of practical importance from the point of view of the clinical application of the reproductive hormones, the biological properties of which have been determined by experiment on the lower mammals. The menstrual cycle characterized all the Old World monkeys which had been studied, the adult females experiencing uterine bleeding roughly every thirty days. The skin of the external genitalia might form a highly sensitive area (sexual skin), which at intervals became swollen and coloured. These changes varied with the species, but their relation to menstruation always appeared to be constant. Sexual skin activity was normally limited to the first half of the cycle, swelling and coloration beginning immediately after menstruation and subsiding shortly after the mid-point of the cycle. This was correlated with ovulation, which might take place at any time between the ninth and eighteenth days of a regular twenty-eight-day cycle. It divided the oestrous cycle of the lower mammal into a pre-ovulation phase (when the endometrium was growing under the influence of oestrin) and a post-ovulation phase (when the uterine mucosa was being subjected to the action of the luteal hormones). Each phase ended with degeneration. In the menstrual cycle endometrial degeneration occurred only once—at menstruation. The two phases

were thus not separated from each other, as in lower mammals. If the oestrous and menstrual cycles were related phylogenetically, their main difference lay in the distribution of their respective follicular phases, for in the lower mammal this phase ended at ovulation, while in the primate it was prolonged throughout the cycle, post-ovulation uterine growth being superimposed on a persisting pre-ovulation endometrium. It was possible that menstruation itself was immediately due to the cyclical withdrawal of the hormones (particularly oestrin) which acted on the uterus; but the primary cause appeared to be the cyclical interruption of the control which the anterior lobe of the pituitary exercised on the ovaries.

Professor W. Frei (Zürich) discussed the chemical changes of the serum in cattle during the oestrous cycle. He showed that calcium decreased before and increased during oestrus, as also did glucose—due possibly to a higher irritability of the sympathetic system. There was a decrease in the refraction during oestrus and an increase in the inter-oestrous period, but this was slight compared with the others. The protein content of the serum, however, was always higher in winter than in summer. He concluded that the chemical composition of the serum and oestrus were definitely connected. Dr. A. S. Parkes said that he found great variation in the reproductive processes of different mammals. In the mouse the complete reproductive cycle took about six weeks, while in some large mammals it took three years. Dr. B. P. Wiesner (Edinburgh) said that he proposed to recognize a third phase in the sex cycle—the phase of maternity—probably caused by the action of the anterior lobe of the pituitary. He demonstrated this with a cinematograph film.

Mr. R. Grant (Edinburgh) stated that in sheep changes in the uterus during the oestrous cycle were not directly attributable to ovarian secretions. The uterine changes in this animal differed completely from those in the mouse, the entire follicular phase being degenerative and the entire luteal phase being regenerative, probably due to factors outside the ovaries. Pseudo-pregnancy changes did not occur in sheep, and sterile coitus had no effect on the duration of the oestrous cycle or the changes which accompanied it. Mr. W. C. Miller (Edinburgh) discussed the possibility of diagnosing pregnancy in mares by using the cornifying hormone content of urine to produce cornification of the vaginal mucous membrane in mice. He found that this test was about 97 per cent. accurate, especially subsequent to the sixtieth day after service. Dr. Zuckerman briefly replied to the discussion.

SECTION OF DERMATOLOGY AND VENEREAL DISEASES

Wednesday, July 27th

Non-specific Protein Therapy

The opening paper of the discussion on the uses of non-specific protein therapy, by Dr. Cranston Low (Edinburgh), was read by the President, in the unavoidable absence of the author. After discussing the general principles of protein therapy, the methods of administration, including the use of blood and serums, milk, and preparations made from milk, tissue extract such as spleen extract, vegetable extract such as pollen extract, bacteriological proteins, proteoses, peptones, chemicals, and artifically induced diseases such as malaria, the mechanism of the reactions and the results of treatment of the different skin and venereal diseases were enumerated. The method had been applied with varying success to a large number of diseases of the skin, and the results in urticaria, eczema, and various forms of dermatitis, pemphigus, dermatitis herpetiformis, pregnancy dermatoses, lichen planus, staphylococcal and streptococcal infections, ringworm, lupus erythematosus, and lupus vulgaris were discussed. The paper concluded with a summary of the dangers and contraindications of the treatment, and with a summary of its therapeutic value.

Dr. Henry MacCormac referred to two cases, the first, a woman *in extremis* with mycosis fungoides, who recovered following an attack of erysipelas, and the second, a man with lupus erythematosus who had been treated by all recognized methods, but whose eruption only cleared up on one occasion—following a carbuncle. There were other cases where aggravation of the eruption followed the natural infections—for example, in psoriasis and eczema after influenza. This showed the necessity for establishing some guiding system for the use of non-specific methods, and for this purpose he suggested the classification of skin diseases into three groups, as follows: (1) the parasitic, (2) the allergic, (3) the non-allergic. The first group included chronic furunculosis, which could almost always be favourably treated by "whole blood" injections, in his experience a method greatly superior to vaccine therapy. The allergic group embraced conditions such as urticaria and eczema. In the former it was usually impossible to identify the causal agent, and for this reason non-specific treatment was as a rule necessary. Here again "whole blood" injections were useful. Other methods included intravenous injections of sodium thiosulphate and peptone administered by the mouth an hour before meals. The treatment of eczema was very similar, but in addition to the methods mentioned above vaccines from the intestinal flora and intramuscular injections of peptone should be included. It was essential to employ local remedies concurrently to obtain the best results. Those forms of non-specific protein therapy which induced fever were as a rule to be avoided. Psoriasis was an example of the non-allergic eruptions. Here one of the more active "shock treatments" might be used, but they had not proved altogether satisfactory. If the application of the methods of treatment under consideration led one to suspect the specificity of, for example, vaccine therapy, at least in certain cases, that might not be a disadvantage. Dr. Norman Burgess (Bristol) found that with regard to autohaemotherapy and autoserotherapy, the best clinical results were obtained in acute psoriasis, varicose dermatitis with sensitization eruption, and toxic erythema. Urinary proteose was prepared and the skin reactions tested before and after treatment in some cases. Those which responded best to autohaemotherapy and autoserotherapy were found to have positive skin reactions before treatment. After treatment and cure, in most cases, the reaction to proteose had become negative. He thought, therefore, that the action of autohaemotherapy and autoserotherapy might be specific rather than non-specific. Dr. J. T. Ingram (Leeds) drew attention to the danger of deceiving oneself into the belief that the weapon of non-specific protein therapy was a rational and scientific line of treatment. Among the dangers which were produced by protein shock treatment there were some which were characteristic of disease itself, and it was not surprising that they might on occasion modify the course of the disease. Affections which might be classed as disorders of function rather than diseases were benefited by this line of treatment. He feared that the ever-increasing use of non-specific therapy might lead us to neglect the search for truth and a rational therapy in these disorders. Dr. Milian (Paris) had often observed tuberculous adenopathies light up and suppurate in the presence of secondary syphilis. The proof of the tuberculosis had been established by guinea-pig inoculation. He had shown that these tuberculous adenopathies in syphilitic subjects had been cured by mercury, while this treatment

had had no effect on non-syphilitic cases of the same condition. In like manner mixed secondary and tertiary chancres which were usually in the form of soft papular or phagedaenic sores were rapidly cured by mercury. These were examples of cure of diseases by a non-specific remedy, but one which was at the same time the remedy for another disease of which the patient was the subject (heterotherapy). The same principle applied to the treatment of syphilis by malaria, which at the present time was proposed by some as the sole remedy for both syphilis and general paralysis. Practical experience had shown that in conformation with what he (Dr. Milian) had said in 1920, it was not the malaria that cured but the anti-malarial treatment in a malarial subject.

Dr. H. HALDIN-DAVIS described a case of exfoliative dermatitis of long duration, treated first with T.A.B. vaccine, to which the patient failed entirely to respond. During the course of his stay in hospital he had developed severe bronchopneumonia. From that moment his skin recovered completely, and had remained well during the past two and a half years. He personally thought, contrary to the view of other speakers, that a rise in the temperature was a desirable effect in protein treatment. He had found psoriasis quite unresponsive to specific protein therapy. Dr. J. E. M. WIGLEY supported Dr. Haldin-Davis's view regarding the value of T.A.B. and the advantage of a rise in temperature. He agreed with Dr. Ingram in regarding the results of non-specific protein therapy as only temporary in their effects and the method as unscientific.

QUININE DESENSITIZATION

Dr. J. F. BURGESS (Montreal) read a paper on quinine desensitization. In 1929–30 he had encountered many cases of dermatitis resulting from the use of "after-shave" lotions containing quinine. He had found that in all cases sensitivity to the drug had been acquired by more or less prolonged use of the lotion. In one case complete tolerance had apparently been re-established by the administration by mouth of graduated doses of quinine; in another, a more sensitive subject, tolerance was only partly re-established by the same procedure, but the patient refused complete investigation and treatment. Dr. Burgess discussed the various toxic and allergic phenomena to which quinine was capable of giving rise.

OTHER TOPICS

Dr. GOODWIN TOMKINSON (Glasgow) based his communication on a group of twenty-two cases of monilethrix in which heredity and familial features were strongly marked. Five generations were involved. The frequency of incidence was progressive in the last two generations. One patient's condition improved at puberty. The affection, which varied from practically complete baldness to a reasonably well-covered scalp, originated intrafollicularly. Dr. RUPERT HALLAM (Sheffield), in a paper entitled "Some points relating to the aetiology, the complications, and the treatment of recurrent boils," drew attention to the frequency of intercurrent skin diseases in furunculosis. Fomentation was a common source of reinfection of the skin. The self-disinfecting power of the skin, prophylaxis, and treatment were discussed. Dr. W. J. O'DONOVAN (London) and Dr. A. BURROWS (London) presented an analysis of the cases treated at the London Hospital Skin and Light Department in 1931. Dr. Burrows drew attention to the enormous numbers that were treated at a large London skin clinic, and at the same time showed how modern diagnoses such as pathomimia cutanea, nevrodermite, and psychogenic pruritus were replacing the old term "eczema." Reference was also made to industrial dermatitis. Finally, he endeavoured to show how the figures in a statistical table of the cases treated at the London Hospital might be used as a basis for apportioning the work between hospital clinics, public authorities, and general practitioners.

SECTION OF PUBLIC HEALTH

Wednesday, July 27th

Sir GEORGE NEWMAN, President of the Section, opened the proceedings with an address on the private practitioner and preventive medicine, which will be found at page 190 of our last issue.

ATTENUATION AND PREVENTION OF MEASLES

Professor C. C. OKELL, introducing the subject, remarked that, in the absence of conclusive evidence of a bacterial cause of measles, the postulating of the existence of a filterable virus seemed to be tenable. The serum of convalescent patients had proved effective as a prophylactic agent in many cases, but failures had occurred. The antitoxin in the blood of these patients, however, rapidly decreased, being only 25 per cent. of the original amount five weeks after defervescence. The serum withdrawn in later life from adults who had had measles in childhood was consequently of very doubtful value. A central organization was needed for the collection of the serum of convalescents; a small-scale volunteer service of serum donors was already functioning successfully at University College Hospital. Such an organized supply would be chiefly employed for the protection of sick and weakly children, or for the prevention of the spread of infection in hospital wards and children's institutions. He invited those present to answer the questions: Was there any danger of the protected child being a source of infection to others? and Was there any evidence that sterile human serum even gave rise to reactions when injected into children?

Dr. D. N. NABARRO regretted that in this country very little use was made of this procedure in the prevention of measles. The serum should be withdrawn one week after defervescence, and its filtration was essential. Giving details of its administration, he said that serious reactions in children (other than infants under the age of 6 months) were unlikely. For complete prevention serum should be injected not later than the fifth day of incubation if complete protection was desired. Between the sixth and ninth days "sero-attenuation" in the form of a very mild attack of measles ensued. This should be the aim, rather than the former, which produced only a fleeting, passive immunity for two to four weeks, so that further injections might become necessary in the course of an epidemic. Dr. W. GUNN discussed the incidence and nature of measles epidemics, and detailed the variety of measures for treatment and prevention. He described the successive stages of the development of sero-prophylaxis and the results obtained in London County Council institutions. Anti-streptococcal serum was of use in preventing and treating complications.

Dr. T. M. HUNTER (Glasgow) described an investigation on controlled lines in Glasgow last winter. Serum injections of contacts had secured complete protection in almost 80 per cent. of cases; but since the children were already in institutions, and suspicious cases of measles were immediately placed in quarantine, the period of exposure of these contacts was very short. He agreed that attenuation, rather than prevention, was the ideal. The PRESIDENT said that very valuable constructive work in sero-prophylaxis had been done during the last three years, as had been brought out by the opening speakers. There was some danger, however, in trying to apply too quickly the possibilities that had been discovered. Public opposition and prejudice had to be over-

come, as in the case of vaccination, especially as young children were concerned. There were also administrative difficulties in obtaining a sufficient supply of serum. The President emphasized his belief that sero-prophylaxis of measles was one of the most vital problems of preventive medicine. Dr. COLLIER pointed out that the hospitals were only treating complicated cases ; the rest were being dealt with by general practitioners. When they were first called to such patients it was already too late for serum treatment. Immunization statistics were mainly guesswork ; but it was clear from them that in the most favourable conditions an epidemic could not be controlled by more than 13 per cent. He had found amidopyrin the most efficient drug for treating measles, and stressed its preventive value. Unfortunately, in this country it was too often inert. He believed that serum protective methods were only of academic interest.

Dr. A. S. M. MACGREGOR (Glasgow) commented on the administrative value of Dr. Hunter's work in Glasgow. Most helpful changes had been rendered possible as regards quarantine regulations in institutions for children—susceptible contacts had been most efficiently immunized, and outbreaks of measles had been cut short. In Glasgow there was an adequate supply of serum for such work, but in general practice the conditions were regrettably different, and this measure was much less applicable. Dr. C. KILLICK MILLARD (Leicester) quoted an instance of a tragedy which had occurred owing to the uncontrolled spread of measles in a family in the absence of serum-prophylaxis. In Leicester, and probably in other places, there had been a definite decline in the measles mortality rate, as shown by the comparison of quinquennial averages based on the birth rate. Convalescent serum and other preventive methods were not in operation, and care must therefore be taken in assessing the results obtained by such measures. Such a reduction had not occurred in the case of whooping-cough, and there seemed, therefore, to be a definite improvement in progress.

Dr. W. G. SAVAGE (Weston-super-Mare) reported a similar decline in measles in his area. Delay, he added, rather than prevention, should be the objective in dealing with the contraction of the measles infection, and an attenuated attack should be promoted when possible. The protective value of serum had, therefore, a really practical scope in children under the age of 5. Dr. D. McK. SUTHERLAND (Manchester) said that in that city there was in existence a roll of voluntary donors. They received payment and expenses on each occasion of blood withdrawal. It was very necessary to verify the diagnosis in selecting such donors. Collectors must see each case in the acute stage of the disease, and avoid using patients suffering from complications. Dr. R. A. GLEGG (Sussex) stressed the great value of the propaganda possibilities of health visitors in ensuring that the serum administration was limited to homes where it was really necessary.

Professor OKELL, replying, said that it was necessary to be more systematic than hitherto in marshalling the great mass of evidence now available as regards the potentialities of convalescent serum. Further statistical investigations were urgently necessary. An emergency scheme should be drawn up for dealing with the really serious cases of measles, and should include the administration of serum by general practitioners.

PHYSICAL FACTORS IN THE MENTAL CAPACITY OF SCHOOL CHILDREN

Dr. J. RIDDELL (Stirling) read a paper on this subject describing the investigation of a group of children aged 9, and another group aged about 13. The classification headings were "advanced," "normal," "retarded," and "very retarded." Such a classification had been found to be sound, but position in school could not be taken as evidence of mental capacity. There was a tendency for a larger proportion of girls than boys to be above the normal in mental capacity. There was also a higher percentage of dull children in the families of manual workers and of advanced pupils in the families of sedentary workers. A steady decline in nutrition was noticeable, as judged by height and weight, from clever children to very dull ones, the bulk of the latter coming from houses with only one or two apartments. Most dull children, and especially backward girls, came from houses with more than two persons in each apartment. As a rule, children of good mental capacity were cleanly, while those of poor capacity were dirty, and suffered from lack of care. The height and weight were less in the case of children employed out of school hours, and they had fewer hours of sleep. Visual, speech, auditory, pulmonary, and organic cardiac defects caused retardation, but minor defects had no such consequence. In short, the home environment and nutrition of the child were strong factors affecting the intelligence. The intelligence and mental capacity figures could be substituted one for the other in the regular attender groups.

SECTION OF TUBERCULOSIS

Wednesday, July 27th

TUBERCULIN IN DIAGNOSIS

Sir ROBERT PHILIP, President of the Section, on taking the chair, proposed the following resolution, which was received by members standing in silent homage.

> The Tuberculosis Section of the Centenary Meeting of the British Medical Association, assembled at London in the jubilee year of the discovery of the tubercle bacillus, before commencing business, pauses to salute the name of Robert Koch. Members of the Section, by unanimous vote, record afresh their homage to the incomparable leader, the triumphs of whose genius have enrolled him among the creators of medicine and secured for him, for all time, the gratitude of mankind.

Professor S. LYLE CUMMINS read the opening paper on the present position of tuberculin in diagnosis and treatment. Dr. P. M. D'ARCY HART said that the belief that tuberculin was of value only in early childhood was unjustified. Old tuberculin (prepared according to international standards) and the Mantoux method gave an error of only 2 per cent. at all ages. In London only 20 per cent. of hospital children were positive at 5 years of age, and 70 per cent. at 16. The value of the test in negative diagnosis would progressively increase. Dr. A. RICE RICH (Johns Hopkins University) described four types of successful experiments to separate immunity from allergy. First, active immunity could operate in full force without allergy. Secondly, injection of the serum of allergic immune animals into normal ones transferred the immunity of the former to the latter, but not the hypersensitiveness. Thirdly, immune desensitized animals remained immune to lethal doses of millions of virulent bacteria. Fourthly, the inhibition to spread of bacteria in the immune body was accomplished by an organism quite independently of hypersensitiveness. The allergic inflammation was not at all necessary for the protection of the body. Dr. WILLIAM STOBIE (Oxford) preferred tubercle ultra-protein to old tuberculin. The dangers of subcutaneous tuberculin had been grossly exaggerated. It should not be condemned because of its focal and general reactions, any more than a substance like sanocrysin. Dr. WILLIAM CHARLES WHITE (Washington) stressed the necessity for a purer substance than the old tuberculin. Every biological advance to-day was on the lines of increasing refinements in chemical substances —for example, insulin, cortin, and ergosterol. Owing to

the work of Subert, who had crystallized the substance producing a skin reaction, they should in future be able to obtain more accurate results. Until a point of greater accuracy of method was reached, research with tuberculin would help the statistician rather than the clinician. Dr. Halliday G. Sutherland said that neither early clinical signs nor early *x*-ray evidence were diagnostic. The subcutaneous tuberculin test was superior to all the routine tests. In skilled hands there was no risk. Dr. R. Carswell emphasized the value of tuberculin in diagnosing the early case, by using the subcutaneous method. It furnished information obtainable in no other way. Objections to the use of the subcutaneous test applied equally to the intracutaneous method. The speaker criticized the work of Dr. D'Arcy Hart in this respect. Later on, as a test of cure, the subcutaneous method continued to be more valuable. Dr. D. Melville Dunlop (Edinburgh) described the percutaneous test with 50 per cent. tuberculin ointment. It was less sensitive than the Mantoux reaction, but more convenient in dispensary practice. He thought the value of the test very great in those cases where the tuberculous lesions could be observed—for example, the eye, larynx, etc. Dr. Ernest T. D. Fletcher spoke of the latent case of tuberculosis in children. A symptomless consolidation of the lungs, lasting for three months and healing completely, should be diagnosed as tuberculosis. The test should be repeated more often. This group of cases, with their waxing and waning of sensibility to tuberculin, might well throw light on the present high mortality from pulmonary tuberculosis in the post-adolescent group.

Tuberculin in Treatment

Dr. W. Camac Wilkinson emphasized that the successful treatment of phthisis was the foundation of preventive measures in tuberculosis. Institutions should be reserved for a few acute cases, but 75 to 80 per cent. in the early stages of the disease could be helped by tuberculin in the hands of a physician with courage, experience, and skill. The speaker had been impressed with the results of tuberculin treatment of ophthalmic and laryngeal disease. The solution of tuberculosis lay in the home. Wage-earners need only spend a short period each week obtaining treatment in the tuberculin clinic, which afforded diagnosis, treatment, and prevention. Dr. F. G. Chandler was inclined to think that the doctrine of tuberculin, like that of antiphlogistine, would take its place in history as one of the ingenious errors of the human mind. Dr. A. B. Porteous described his use of tubercle bacillary emulsion. Whole bacilli were necessary in order to produce allergy. The anaphylactic condition of the patient might usefully be tested before a course of tuberculin. Dr. James Watt (King George V Sanatorium) described his results in treatment using the method of Camac Wilkinson in a group of thirty-one patients with pulmonary tuberculosis. There were no spectacular changes. At the end of two years five cases were quiescent, four were improved and working, seven were stationary, five were in hospital, and seven patients had died. In a control series of thirty-one cases similar in type, fifteen were dead within two years. Dr. J. C. Gilchrist (Cardiff) described his successful experience with bacillary emulsion in non-pulmonary cases. The constant control maintained over cases undergoing tuberculin treatment was in itself good therapeutics. Dr. J. Gordon Hume said that the rules and limitations laid down by Koch must be observed carefully. Beginning with small doses and following Camac Wilkinson, he gave eventually up to 1.75 c.cm. of Koch's tuberculin, albumose-free. Dr. J. R. Gillespie (Co. Down, Northern Ireland) gave his experience of tuberculin in patients with positive sputum who were found able to work up to ten years after the commencement of treatment. A group of patients who had three months of tuberculin but no sanatorium treatment improved very much more than a control group.

An occasional paper was read by Dr. William Charles White on co-operative studies in the U.S.A. on the chemistry of acid-fast strains.

SECTION OF PHYSICAL MEDICINE

Wednesday, July 27th

Manipulation and Electricity in Therapeutics

The opening paper on the role of manipulation in therapeutics was read by Dr. James Mennell, the President, Sir Leonard Hill, being in the chair. Dr. Mennell pointed out the lack of appreciation of the scope and indications for manipulation which prevailed at present. He welcomed this discussion as being the first with wide authority. He emphasized the dangerous confusion surrounding the term "passive movement," and elucidated his views on the subject. The manipulative technique of the metacarpo-phalangeal joint was considered by way of illustration. He divided the joints of the body for the purpose of this discussion into those of the extremities and those of the spinal column, and stated that manipulation would only be successful (*a*) in the absence of *active* pathological processes, (*b*) when the limitations were due to adhesions, or (*c*) to the locking of joint surfaces. Finally, he emphasized the need for manipulation to be performed with a skill that would lay no undue strain on normal structures. In order to conform with these criteria he pointed out that accurate diagnosis was essential, and it was owing to faulty diagnosis that the "bonesetter" generally failed ultimately. Dr. Mennell emphasized the importance of minor damage to joints as a factor predisposing to the occurrence of severe arthritic lesions in the later periods of life. He dealt at some length with the basis of the "wonderful" cures performed by unqualified practitioners, and ended with a brief note on the as yet unexplored fields of the subject.

Sir R. Stanton Woods introduced several debatable aspects of the subject. He first classified "adhesions" under six headings, and pointed out that not all forms of these were suitable for manipulation; much harm was often done by unskilful diagnosis and treatment. He stated that certain small joints could be manipulated without an anaesthetic with a greater chance of success, and vice versa. He then stressed the pre-eminent suitability of the traumatic forms of arthritis for this procedure. The necessity for a radiogram in every instance was mentioned, as were certain contraindications, such as interstitial neuritis. He looked on an examination under anaesthesia in difficult cases much as a surgeon looked upon exploratory operations. He felt, however, that he generally did less ultimate harm than they did. The necessity for a general anaesthetic and adequate immediate after-treatment was mentioned. Dr. Fortescue Fox spoke briefly, confirming the main indications laid down by the previous speakers. Dr. L. Capper-Johnson urged the more extensive study and use of manipulative methods, which could, he said, be mastered by any medical man with an aptitude for mechanics and some knowledge of anatomy. Dr. W. E. Tucker emphasized the remote effects of local injury, and gave a scheme of treatment which he advocated for use in all cases of injury to muscles and ligaments, and which he adapted for use in various situations in the body. He finally appealed for closer co-operation between surgeons and physiotherapeutists, and for more experimental work on the therapeutic results of electric applications. Dr. Thomas Marlin discussed the various sounds which could be produced by the manipulation of joints. He was of opinion that, although many represented the breaking

down of adhesions, others were merely suction sounds caused by the separation of the joint surfaces. He commented upon the reflex connexion between the joints and the supporting musculature, and ended with a plea for a more open declaration on the value of manipulative methods by the large number of medical men who were using them somewhat *sub rosa* and finding them of great value.

The opening paper on the role of electricity was then read by Dr. E. P. CUMBERBATCH. He stated that medical electricity achieved its effects, speaking broadly, by means of either chemical (ionic) effects induced in the tissues of the patient or else by the production of heat locally. He dealt fully with the question of thermotherapy from all points of view, stressing particularly the action of high-frequency currents, both in medicine and in surgery. The galvanic current was then considered in its various therapeutic aspects, and the sinusoidal current briefly dealt with. Dr. C. A. ROBINSON dealt in some detail with the technique of the use of the direct, faradic, sinusoidal, alternating, and diathermy currents. He also discussed their probable physiological effects. Dr. JOHN COWAN (Manchester) referred to the "dumping" of derelict cases in the departments of physical medicine of general hospitals. He maintained that that was not a fair trial of methods which, under suitable circumstances and in properly selected cases, would yield quicker results than any other.

SECTION OF PHARMACOLOGY AND THERAPEUTICS

Wednesday, July 27th

SERUM TREATMENT OF PNEUMONIA

At the opening meeting of the Section, with the President, Professor J. A. GUNN (Oxford), in the chair, Dr. R. CECIL (New York) read a paper on the serum treatment of pneumonia. He pointed out that the many specific types of pneumococci complicated the serum treatment of pneumonia. Vasomotor collapse was the usual cause of death in pneumonia. A bacteriaemia carried with it a serious prognosis, and the appearance of immune bodies in the patient's blood was a good sign. Dr. Cecil said that during the past eight years interest had centred on the refined and concentrated serum devised by Felton of Harvard University. In 239 cases of Type I pneumonia treated with the serum the mortality rate was 20.1 per cent.; 234 alternate controls showed a death rate of 31.2 per cent. In 103 cases receiving serum treatment within seventy-two hours of onset the mortality was only 11.7 per cent., while ninety-seven controls had a mortality of 26.8 per cent. In Type II pneumonias serum treatment effected a reduction in death rate of only 5 per cent. Early treatment was essential, and with this in mind better results might be obtained in the future. In conclusion, he claimed that the development of a refined, concentrated, and polyvalent anti-pneumococcal serum had reduced the serum treatment of pneumonia to a simple, practical, and valuable therapeutic measure.

Dr. J. A. RYLE stressed the importance of carrying out similar studies in this country, where the natural history of pneumonia differed in many respects from that in America, particularly in regard to mortality. As 80 per cent. of patients in this country recovered apart from serum treatment, he did not consider that early serum treatment was particularly indicated. Early recognition of cases that were going to be fatal was the really important practical point, and to this end he advised much further close clinical and laboratory study. A reinvestigation of prognosis was wanted. Statistical reviews often took no account of age, sex, constitution, and other factors which were of vital importance. Professor L. S. P. DAVIDSON (Aberdeen) said that he had a firm conviction that in time serum treatment would be shown to be correct. He advised typing of all cases. At least 100 cases and a similar number of controls should be used for statistical analysis. He then gave a brief summary of the results obtained at Aberdeen. Professor D. MURRAY LYON (Edinburgh) emphasized the difficulties of investigations on serum treatment in pneumonia—strict selection of cases had been exercised at Edinburgh. Serum increased the percentage of cases which were afebrile earlier in the course of the disease. Where the patient could afford treatment serum should always be given, and discontinued if typing showed that the infection was by organisms of groups other than I or II. Dr. R. R. ARMSTRONG gave his records of 160 cases. Early typing was essential, and his own method of rapid typing was both simple and accurate. Dr. R. CRUICKSHANK (Glasgow) considered that there was a real field for serum treatment in this country. He reviewed the results of investigations at Glasgow. Dr. R. A. O'BRIEN gave a short account of the preparation and testing of anti-pneumococcal serum, and described the two methods of titrating antibody. The recent preparation of a dried stable Type I antiserum—and the projected supply of a similar provisional standard for Type II serum—at the National Institute for Medical Research, should enable English serums to be titrated in terms comparable with those current in America and based on a serum supplied by Felton. One could concentrate serum about ten times; about half the units might be lost in the process. Dr. O'Brien thought it irrational and wasteful to use combined I + II serum. If the clinician wished to use both serums in the first few hours prior to typing he could give a dose of the two mixed at the time. Professor J. A. GUNN, Dr. LANGLEY (Manchester), and Dr. HEIMANN (S. Africa) also spoke, and in reply Dr. R. CECIL said that he was impressed most by the uniformity of the results presented.

THE MECHANISM OF SALIVARY SECRETION

Professor V. HENDERSON (Toronto) read a paper on the mechanism of salivary secretion. In the subsequent discussion Professor F. R. FRASER drew attention to the importance of recent work on the relation of acetylcholine to nerve stimulation. Professor A. J. CLARK (Edinburgh), Professor J. A. GUNN (Oxford), and Professor R. ST. A. HEATHCOTE (Cairo) also spoke.

SECTION OF ANAESTHETICS

Wednesday, July 27th

CHOICE OF ANAESTHETIC FOR ABDOMINAL SURGERY

Sir FRANCIS SHIPWAY, President of the Section, took the chair at its first meeting. Professor H. FINSTERER (Vienna) then opened a discussion on the choice of anaesthetic for abdominal surgery, basing his observations on 5,172 abdominal operations performed by him during the last twenty-five years under various methods of anaesthesia. He stated that chloroform caused most of the immediate deaths, while ether, when prolonged, injured the normal powers of resistance and favoured the incidence of post-operative respiratory complications. He used neither avertin nor pernocton, because his experience led him to believe that these substances were not entirely devoid of risk. With regard to local anaesthesia, he preferred a regional or conductive anaesthesia by which the sensitive nerves were blocked within the abdominal wall, in the mesenteries, near the spinal column, or within the dural sac. The sensibility of the patient was reduced by pre-medication with pantopon, morphine, and atropine; in addition, there might be a short general narcosis. The most commonly used drug for local anaesthesia was novocain in 1/2 to 1 per cent.

solution, combined with adrenaline. Professor Finsterer also related his experiences with splanchnic, paravertebral, epidural, and spinal anaesthesia, with their uses in particular operations.

Mr. A. J. Walton said that from the surgical point of view the requirements of a perfect anaesthetic were that the patient should be unconscious of pain—physical or mental—and that there should be perfect relaxation of the muscles. Inhalation anaesthesia secured unconsciousness, but mental pain could be overcome by suitable pre-operative medication. He believed that with inhalation anaesthesia the surgeon was dependent upon the skill of the anaesthetist for the production of adequate relaxation. Although he found that the two requirements mentioned above could be fulfilled by the use of ether, he appreciated the ill effects which sometimes occurred after its administration. He then detailed his experiences of intravenous anaesthesia, anaesthesia of the sensory nerves, and of oral and rectal methods. Mr. Walton believed that it was impossible to state that for certain lesions one, and one only, of the above methods should be used. The choice must be in the hands of the individual surgeon and anaesthetist, and he had found that, as a routine, the best results in abdominal cases were obtained by the use of open ether.

Mr. G. Gordon-Taylor stated that anaesthetists and surgeons were being bombarded by manufacturers with an almost continuous fusillade of anaesthetic drugs. Professor Finsterer's paper came as a timely reminder of what might be effected by a complete and perfect mastery of a relatively uncomplicated technique. Mr. Gordon-Taylor considered that for safe conductive anaesthesia novocain had stood the test of time, and for some years it had been his practice to employ combined anaesthesia in almost every abdominal operation of any moment. Nothing could be more satisfactory than the results of cholecystectomies performed under regional and light general anaesthesia. Mr. J. P. Lockhart-Mummery stated that he was one of the first surgeons in this country to use local and regional anaesthesia for abdominal operations, and for at least ten years he had not used chloroform or ether for abdominal operations as a routine method. He employed either scopolamine-morphine or avertin as basal narcotics, but he preferred avertin. For cutaneous anaesthesia and relaxation of the abdominal muscles he used 2 per cent. novocain. Regional anaesthesia of the abdominal walls was produced by blocking the main nerves on both sides in the intercostal spaces, assisted when necessary by local infiltration of the tissues in the field of operation. This was an excellent method, but it was necessary to wait twenty or thirty minutes for the desired effect to be produced. For operations on the pelvis he used spinal anaesthesia and avertin. While agreeing with Professor Finsterer as to the dangers of high spinal anaesthesia, he found low spinal anaesthesia with stovaine safe and satisfactory.

Mr. Norman C. Lake believed that high spinal anaesthesia with percaine met the requirements of a perfect anaesthetic for abdominal operations more nearly than that of any other type. He used percaine 1 in 1,500 solution in doses of 14 to 18 c.cm., and in hypobaric solution. Anaesthesia reached the level of the fourth dorsal segment, and lasted for nearly two hours. The fall of blood pressure was not serious, and was more or less predetermined and controllable. The psychological effect must be handled sympathetically and confidently. Dr. Wesley Bourne (Montreal) expressed his appreciation of Professor Finsterer's methods. He suggested that these would be improved if used in conjunction with a basal narcotic.

The President considered that the less general anaesthetic used the better, and advocated the extended use of combined methods. Mr. J. B. Oldham (Liverpool) stressed the advantages of spinal anaesthesia in abdominal surgery. In an experience of 2,500 cases no immediate anxieties were noted.

Mr. van Zyl (South Africa) stated that there was no comparison between spinal and local anaesthesia on the one hand and general anaesthesia on the other. The former was preferable, and because there was no effect upon liver function he advocated its employment for acute abdominal operations. Dr. H. W. S. Wright had used percaine as a spinal anaesthetic after the method described by Howard Jones, and he considered this drug preferable to novocain or stovaine. He advocated the simultaneous employment of gas and oxygen as a prophylactic for post-operative bronchitis.

Dr. L. Elwell Johnston (Wimbledon) considered that open ether held its own against other methods of anaesthesia. Dr. W. Howard Jones was of the opinion that the majority of anaesthetists were unaware of the composition of the materials which they employed. He regarded the fall in blood pressure in spinal anaesthesia as due to the toxic effect of the drug employed. Dr. Z. Mennell stressed the necessity for close collaboration between the surgeon and the anaesthetist. He confessed a strong liking for deep ether anaesthesia, and stated that he saw exceedingly few cases of post-operative chest complications. A great deal depended on the celerity of the surgeon, for complications were prone to follow a long anaesthetization with ether. Dr. Flemming (Bristol), Dr. Strange (Wolverhampton), and Dr. Hadfield (London) supported Dr. Mennell's opinion ; while Dr. Bessie Cook (Doncaster) pleaded for the extended use of gas and oxygen. Professor Finsterer replied briefly to the points raised in the discussion.

Spinal Analgesia

Dr. E. Falkner Hill (Manchester) read a paper on the above subject. He pointed out that novocain-gliadin mixtures were free from the disability, so usual with simple novocain, of producing nausea and vomiting. He considered that gliadin prevented diffusion of the novocain. He showed tracings which indicated that novocain was only dangerous when it affected the respiratory apparatus, and he believed that there was nothing to be feared from the absorption of novocain from the cerebro-spinal fluid into the blood stream, as it was necessary to administer nearly ten times as much novocain intravenously as by the intrathecal route in order to produce respiratory paralysis.

In the discussion which followed, the President stated that he did not regard high spinal anaesthesia as safe in every case. He did not think that the manipulations of the surgeon in abdominal operations necessarily produced a fall in blood pressure, for this frequently occurred before manipulations had taken place. Ephedrine, however, was of considerable value in regulating blood pressure.

Dr. W. Howard Jones stated that the subarachnoid block was the simplest and most efficient nerve-block obtainable, but on account of the rapid absorption which occurred from the subarachnoid space only a small dosage was permissible. No surgeon would inject a 10 per cent. solution of a drug into the tissues, yet this was constantly done into the spine. Dr. Falkner Hill's claim that gliadin prevented such absorption was best answered by the reports of sudden collapse which had been published. Mr. Norman Lake said that he could not agree that the fall in pressure was due entirely to absorption of the drug into the blood stream. He considered

that there was but one factor—namely, vasomotor paralysis. The fall in blood pressure was not affected by the surgeon's manipulations, even when the vagi were blocked. Dr. H. W. FEATHERSTONE (Birmingham) believed that the injection of a dilute solution produced much less fall in blood pressure than a concentrated solution. Professor FINSTERER considered that novocain should not be used in concentrations greater than 1/2 per cent. Dr. WESLEY BOURNE stated that in Canada, where novocain was administered in concentrated solution, a marked fall in blood pressure was frequently observed.

SECTION OF OPHTHALMOLOGY

Wednesday, July 27th

OCULAR SIGNS OF FIFTH NERVE LESIONS

The chair was taken by Sir JOHN PARSONS, who expressed appreciation at his being chosen as president of the Section at the Centenary Meeting. Mr. R. FOSTER MOORE opened the discussion on the ocular manifestations of lesions of the fifth nerve. He said that the ganglion might be affected by middle-ear disease, basic meningitis, and cerebello-pontine tumours, or the nerve might be involved in pathological processes in any part of its course. The speaker gave a short account of the phenomenon of referred pain, showing the ease with which it could be studied in the eye, and came to the conclusion that it was an expression of irradiation in the nucleus. Post-mortems of severe cases of herpes zoster ophthalmicus showed that the pathology was an acute haemorrhagic inflammation of the ganglion. The clinical manifestations were burning pain, followed by a rash in three to four days, vesiculation, scarring, and anaesthesia. The ocular complications were corneal affections, irido-cyclitis, optic atrophy, and ocular palsies, and these occurred in 60 per cent. of cases. While the first three usually had serious results, ocular palsies usually recovered completely. Discussing the nerve supply of the cornea, Mr. Foster Moore showed how easy it was to become familiar with the appearance of the corneal nerves by means of the slit-lamp. He concluded with an account of the aetiology and treatment of neuro-paralytic keratitis, and gave it as his opinion that tarsorrhaphy should be done at once in these cases.

The second opening paper was read by Dr. C. M. HINDS HOWELL. He regarded corneal ulceration as the chief danger to be apprehended from desensitization of the globus oculi. He accordingly submitted the following questions for consideration: (1) Is corneal ulceration more likely to occur according to the part of the afferent path which is affected? (2) What may be done to prevent such ulceration from occurring, and if it occurs what methods should be applied to deal with it? (3) What are the ultimate results of ulceration likely to be? It was only when a lesion affected the first afferent neuron that spontaneous corneal ulcer was likely to occur. An acute injury or inflammation was more likely to produce a corneal ulcer than a slower destructive process. He referred to sixty cases of tic douloureux, which he had treated by injection of alcohol, sixteen of which developed corneal ulcer. The period of greatest danger was the first fortnight after the injection. After a month or so the risk was small. There was a possibility that the ulceration was due to irritation of antidromic fibres, but the same danger was present even if the ganglion was removed. He thought careful protection of the eye afterwards greatly minimized the risk. He had never seen affections of the deeper structures of the eye after alcohol injections. He did not favour tarsorrhaphy as a routine, but preferred to keep the upper lid strapped down for two to three weeks and then to use an eye-shield, which was eventually discarded.

Mr. HUGH CAIRNS said that neuro-paralytic keratitis occurred in seven out of twenty cases in which he divided the sensory root. Others with larger experience found the complications to be less frequent. He favoured strapping of the lids. He said that corneal sensation could be preserved by performing a fractional division of the outer portion of the sensory root.

Dr. HUGH CARLETON (Bristol) had only two cases of corneal complication in cases of tic treated by alcohol injection. He favoured using small quantities of alcohol, say 3 to 5 minims. Mr. J. H. DOGGART found that epithelial oedema was the first sign of the involvement of the cornea in herpes zoster. He stressed the importance of rest in bed as a preventive. Dr. A. J. BALLANTYNE (Glasgow) thought that some ocular diseases were due to lesions of other organs which were also supplied by the fifth nerve—for example, sinuses, nasal mucosa, or teeth. He thought there was a liberation of histamine at nerve terminals in the cornea—a local reflex in the fifth nerve. Mr. CHARLES RUDD (Birmingham) had five cases of corneal complication out of eighteen cases of Gasserian injection. His routine treatment was a moist chamber for three weeks, followed by the use of goggles.

Others who took part in the discussion were Mr. N. BISHOP HARMAN, Mr. D. V. GIRI (Eastbourne), Mr. F. A. JULER, Mr. CYRIL WALKER (Bristol), Sir RICHARD CRUISE, and Dr. RUSSELL BRAIN, who referred to the treatment of post-herpetic pain. He recommended injection of pituitrin, intravenous sodium iodide, convalescent serum, and *x*-ray irradiation of the ganglion. The chairman summed up and referred to his recollections of Horsley's methods. He added that tarsorrhaphy was of the utmost importance.

SECTION OF RADIOLOGY

Wednesday, July 27th

X RAYS IN LUMBAR AND SCIATIC PAIN

The President, Dr. STANLEY MELVILLE, took the chair. Dr. JAMES E. BRAILSFORD (Birmingham), opening a discussion on radiographic investigation of lumbar and sciatic pain, stressed the great variety of causes of this type of pain and the necessity for careful *x*-ray investigation. The causative lesions could be divided into five main groups: congenital, traumatic, toxic, inflammatory, and neoplastic. Although congenital abnormalities occurred in as many as 25 per cent. of normal people, and caution was therefore needed in diagnosing them as the cause of pain, nevertheless such lesions were more often responsible than was commonly believed. Backache in women was due to gynaecological causes in 80 per cent. of cases according to Brooke, but Kark had pointed out the frequency of the existence of gynaecological causes in association with developmental abnormalities. Trauma was a more important factor in the middle-aged than in the young, who frequently received severe injuries followed by rapid and complete recovery. In those cases where pain was a result it was often found that ossification of ligaments had occurred. It was difficult to assess the importance of pain following trauma, and the severity and duration of pain did not necessarily vary with the extent of the bone injury. In those cases attributable to toxaemia, few or no changes in the spine were, as a rule, apparent radiographically, and in cases where arthritis was marked pain had usually become less severe. In these, radiographic search for possible foci of sepsis was often most valuable, especially in regard to the alimentary and urinary tracts, the sinuses, and the teeth. Dr. Brailsford gave examples which were illustrative of the dangers

of incomplete radiographic investigation of cases. Dental sepsis gave rise to typical radiographic appearances, and was often the cause of sciatic and lumbar pain. It was important that investigations should be made by a radiologist and not by the dental surgeon, who seldom had time to acquire the necessary experience in interpreting the radiographs, and who lacked that medical training which was necessary in assessing the influence of dental sepsis on the patient's health. Much harm could be done by the unjustified removal of teeth which were normal. Such conditions as osteitis deformans, secondary deposits of malignant disease, syphilis, and tubercle could sometimes be demonstrated radiographically before there was any clinical evidence of such lesions.

Dr. R. M. Beath (Belfast), discussing the subject from the point of view of the urinary tract, said that pain varied widely in distribution and severity, and was not a reliable indication of the extent of the disease. Pain was due to the distension of the pelvis, whose sympathetic nerve supply was derived from the sixth thoracic to the first lumbar segments, and this explained the wide distribution. Pyelography, by both the retrograde and intravenous methods, had made accurate diagnosis possible in many painful conditions, such as calculus, tuberculous disease, renal tumour, and hydronephrosis. Dr. Graham Hodgson, speaking of the sinuses, said that very valuable information could be obtained radiographically, but too little attention had so far been paid to accuracy of method. The skull was a complicated and irregular structure whose normal architecture varied considerably. Radiographs should always be taken in the erect position, and the angles at which they were taken should be standardized. The speaker described his technique, which involved the use of a simple mechanism whereby every case could be radiographed from such standardized angles, and showed many films to illustrate the accuracy obtained by such methods.

Dr. R. S. Paterson (Manchester) said that in the alimentary tract, gastric and duodenal ulcer and carcinoma gave rise to lumbar and sciatic pain, especially when adherent to the pancreas. The gall-bladder was a more frequent cause, and Graham's test usually made the diagnosis. Visceroptosis caused lumbar pain, especially in multiparae. Appendicitis was perhaps the commonest condition in the alimentary tract associated with lumbar pain. This occurred especially when the appendix was retrocaecal and when adhesions were present. Other causal lesions were carcinoma of the colon, colitis, and diverticulitis. Stress was laid on the importance of complete clinical examination before recourse was had to radiography. Dr. R. E. Roberts (Liverpool) said that the diagnosis of Paget's disease was radiological or clinical, according as the pain preceded or accompanied the deformity. General radiography of the whole skeleton was necessary. The speaker described the more important bone changes in this disease, and showed radiographs in illustration. An account was also given of the various malignant conditions found in the lumbar spine and pelvis. Dr. Gilbert Scott divided arthritis in this region into two types—spondylitis, which occurred in the young and which was inflammatory, and spondylosis, which was degenerative and which occurred later. He had found that in these cases of "spondylitis adolescens" the sacro-iliac joint was always infected, and that in spondylosis it was always ankylosed. He believed that infection of the sacro-iliac joint was primary and causal. "Wandering pains" in young adults were often prodromal, and should always be investigated. A discussion followed, in which Drs. L. A. Rowden, A. E. Barclay, Delicati, and Burton took part. Dr. Brailsford then replied.

SECTION OF MENTAL DISORDER

Wednesday, July 27th

Mental Health and the General Practitioner

With Sir Maurice Craig in the chair, Dr. C. Macfie Campbell (Boston) opened the discussion on mental health and the general practitioner. There was, he said, an increasing interest in modern times in psychiatric method and theory. The general practitioner's interest in mental health was not confined to the established insanities, but extended over a wide field which included the psychoneuroses of adults and children, character and conduct disorders, and many diseases which had hitherto been considered to be entirely physical in origin. Dr. Campbell referred to the frequent tendency of the physician to look on the patient with a mental disorder as a bore. The Greek term "neurasthenia" gave the physician who used it a degree of comfort, but so often he could do little for the patient. The physician's question should be, "How does this patient fail to adapt to life?" There should be no discrimination between the disorders of any of his patients—all of them were in some way or another maladjustments. The physician's approach to his patients, his understanding of emotional factors and of life in general, and his absence of prudishness were all important as a background for treatment. The mental hospital should be a method of treatment for certain cases, and never a means of getting rid of a patient. Dr. Campbell referred to the economic significance of mental disorder, and pointed out that at the gastro-intestinal clinic at Boston in at least 30 per cent. of the patients the causation was purely emotional, and in a further 20 per cent. there was a psychological factor complicating the physical condition.

Dr. Edward Mapother pointed out that the escape from terminology in diagnosis to the understanding of the patient and his life was the essential difference between the psychiatry of to-day and that of the past. The psychiatrist was taking over much of the work and many of the problems that had hitherto been dealt with by the lawyer and the priest. The popular belief that the education of the doctor qualified him to solve these problems was almost entirely without foundation. He looked forward to better undergraduate and post-graduate education; to suitably qualified general practitioners serving on the staffs of mental hospitals; and the provision of clinics in which general practitioners could take care of their own patients under suitable conditions. Dr. Marion Greaves (Ilkley) drew attention to the absence of facilities for early treatment in the provinces. The general practitioner with a real appreciation that his nervous patients were ill could do much with simple psychotherapy. There was at times a danger of losing sight of organic factors in such illnesses. Dr. J. A. Davidson spoke of the variety of conditions, from antenatal days to the grave, with which the practitioner must deal. Advice on the management of children, sex education, preparation for marriage, and menopausal conditions would be of great value in preventing mental ill-health. Much could be done by the judicious use of rest and an attempt to solve the patient's problems. Professor D. K. Henderson (Edinburgh) said that in many general practices from 65 to 85 per cent. of the conditions dealt with had a psychological element. Understanding of the individual was necessary along the dynamic biological principles stressed by Dr. Campbell. The general practitioner could and should do a great deal, and it was through his work and understanding that public opinion would be led. Dr. Ralph A. Noble (Sydney and Yale) spoke of the education in psychiatry of the general practi-

tioner. He recorded his admiration of the recent report on mental treatment produced by the Association. The isolation of psychiatry from general medicine was to be deplored—the appointment of psychiatrists to all general hospitals would be of great value. Dr. L. A. Weatherly (Bournemouth) pleaded for a still more open door for the general practitioner in the mental hospitals. He believed firmly in the role of the family doctor as the most important in the acquisition of mental health. Dr. J. Stewart Mackintosh discussed the problems of the suburban practitioner and the effect of modern conditions in producing mental ill-health. Dr. R. G. Gordon (Bath) referred to the emphasis laid on psychiatric education in the Association's report. He felt that there was a need for greater co-operation between the general practitioner and the specialist. Dr. W. A. Potts (Birmingham) said that general practitioners had repeated and notable successes in psychiatric work. No case should ever be branded as incurable. Sir Henry Brackenbury spoke of the need for special training in psychiatric method. Common sense and experience were good, but not sufficient in themselves. Dr. Clarence O. Cheney (New York) described the very adequate system of psychiatric education in force in Columbia University. Dr. David Rice (Norwich) said that the medical superintendents of mental hospitals would welcome co-operation from general practitioners, either in part-time clinical clerkships, occasional visits, or in any other way. Hitherto attempts to attract the general practitioner within the walls of the mental hospital had dismally failed. Dr. Macfie Campbell summed up the discussion briefly.

SECTION OF OTO-LARYNGOLOGY

Wednesday, July 27th

Address by the President

In his opening remarks the President, Sir StClair Thomson, expressed his warmest thanks for the honour bestowed upon him in his election as President of the Section.

Recalling the last time the Association met in London, in 1910, he mentioned the names of Sir James Dundas-Grant, Dr. D. Rose Paterson, Dr. P. Watson-Williams, Dr. A. Logan Turner, Dr. Dan McKenzie, and Dr. H. S. Birkett, who had attended that meeting and were now vice-presidents. He also extended a welcome to Dr. R. Graham Brown (Brisbane), Dr. Jones-Phillipson (South Africa), Dr. L. S. Talbot (New Zealand), and, amongst the visitors, Dr. Le Mée (Paris), Dr. Sauer (St. Louis), and Dr. Frankel (New York). In 1910 otology and laryngology were grouped as two separate sections. He felt that it was more in harmony with the progress of these two branches that to-day they should be united, and that it was part of their ambition not only to develop special work, but to show how it contributed to the extension of the great republic of medicine. Among the subjects discussed in 1910 were radiography of the mastoid, based on a demonstration by Dr. Birkett; endoscopy, introduced as "a new field of activity" by Professor von Eicken; and the then great question of whether tonsils should be amputated or excised. On this vexed question it was interesting to read that the debate was summarized as showing that "an obvious tendency was manifest in favour of the latter procedure." Twenty-two years later they were going to consider the end-results of the now generally adopted tonsillectomy.

Otitis Media in Sucklings

Mr. W. M. Mollison then read the opening paper on otitis media in sucklings. He said that sucklings were particularly susceptible to infections of the skin and mucous membranes. They reacted to all these different infections in the same way—namely, by disturbances of the gastro-intestinal tract and pyrexia. They were not in any way able to indicate the site of their ailments. The physician examining a sick infant had to remember that there might be disease in any of its organs, and he could only eliminate any of them by a complete examination. The middle ear was a striking example of this, and in many cases of infants who had died of diarrhoea and vomiting, necropsy had shown the middle ear, and in many cases the mastoid, full of purulent fluid. Owing to the short and wide Eustachian tube in the infant, the middle ear was particularly liable to infection from the nose and nasopharynx, especially if the mother or nurse was suffering from some similar infection. Infection probably also reached the ear by the blood stream more often in infants than in adults. Otitis media with no obvious symptoms was known as latent otitis. The latter might be divided into two groups: "real," in which a child was apparently healthy but on examination was found to have pus in the middle ear, and "pseudo," in which a child had general and gastro-enteric symptoms and was found to have a symptomless otitis. These groups were described by Krassnig and Le Mée respectively. In some cases there might be infection of the mastoid process without any signs in the middle ear. Obvious otitis media included all the cases which had definite signs—discharge, pain, irritation. This might or might not occur in association with general symptoms. Pneumococcal otitis was comparatively common in sucklings, as was pneumococcal infection of other systems, especially pneumonia. Tuberculous otitis media had often been described as being very common in young infants, but the author did not consider this was so. When present the symptoms were due to the actual disease or to its extensions into the immediate neighbourhood such as the facial nerve and the labyrinth.

Dr. Douglas J. Guthrie (Edinburgh) considered that otitis was very common in sucklings. In a certain number the otitis was concomitant and only occurred in the final stages in a marasmic child. In Edinburgh the association of diarrhoea and vomiting with otitis had not been remarked. Parenteral otitis was not recognized, nor was the real latent otitis. Dr. Leonard Findlay did not think that otitis as a cause of gastro-enteritis was at all common. He found that bronchopneumonia was a much more common association of gastro-enteritis. He had tried myringotomy and mastoidectomy, but had not found any great benefit; some cases were definitely worse. Gastro-enteritis occurred in the hospital class and in bottle-fed babies, but not to any extent in private cases or breast-fed children. Dr. Le Mée (Paris) found that the incidence of otitis in sucklings was very great and easily explained by the anatomical configuration of the Eustachian tube. Otitis was responsible for a large number of cases of gastro-enteritis. Myringotomy was necessary. Medical treatment or puncture and suction were of no use. Mr. Herbert Tilley advised that a little chloroform was often justifiable to examine the ears of a sick child. He had found that suction applied after myringotomy was of great value in helping the recovery. Dr. Jean Smith analysed 138 cases of diarrhoea and vomiting, of which 52 per cent. recovered. In 60 per cent. of the fatal cases true pus was found in the middle ear. In cases with otitis she found that vomiting was a more marked feature than diarrhoea. In patients in which the otitis was the primary condition myringotomy and mastoidectomy gave good results; where it was secondary these procedures gave bad results, but in many patients *in extremis* mastoidectomy gave the most excellent recoveries. Dr. J. H. Gibbens had tried myringotomy,

mastoidectomy, and expectant treatment, and found the last the most satisfactory. He described the otitis occurring in the newborn, which was usually due to *B. coli* and which tended to recovery. Mr. J. F. O'MALLEY asked if any signs of labyrinthitis had been found clinically or post mortem in these cases where vomiting was a marked feature. Sir JAMES DUNDAS-GRANT showed a cannula for aspirating the middle ear. He said that the *B. coli* infections tended to spontaneous recovery.

Dr. KERR LOVE introduced Miss Helen Keller and Mrs. Macy. Miss Keller became blind, deaf, and dumb at the age of nineteen months. When she was six years old Mrs. Macy commenced education which enabled Miss Keller in time to understand speech by touch and by the same means eventually to speak. She was able to take a degree at her university. After a demonstration by Mrs. Macy, Miss Keller addressed the meeting.

SECTION OF ORTHOPAEDICS

Thursday, July 28th

COLLES'S FRACTURE

Mr. HARRY PLATT (Manchester), after a brief historical review, said that, though gross displacement was uncommon, some degree of displacement was present in 75 per cent. of Colles's fractures, and therefore a reduction was nearly always necessary. The deformity was threefold, the lower fragment being displaced backwards and radially, and tilted. The backward tilt was the most important element. Even with only a slight displacement a diagnosis could usually be made on palpation, revealing a loss of the normal anterior concavity of the lower end of the radius. Radiography was, of course, essential to confirm diagnosis and to control treatment. An anaesthetic should be used for reduction ; he had found nitrous oxide adequate, but recent experience inclined him to the use of local anaesthesia. For reduction he relied first on traction and hyperextension to disempact the fragments, then on direct pressure to correct the backward tilt, and, finally, on traction again, with palmar flexion and adduction of the hand, to overcome the radial deviation. The essential principle in splintage was the control of the extensor aspect of the forearm, wrist, and dorsum of the hand as far as the metacarpo-phalangeal joints, either by a plaster slab or by metal gutter splints. Only for those fractures that appeared unstable after reduction was it advisable to splint the wrist in palmar flexion. After a long and comparative experience of both methods, his conclusion was that, for the average fracture, treatment by plaster fixation for five weeks without any physiotherapy was better than treatment by early physiotherapy. Active use, however, of all the joints of the damaged limb, except those temporarily immobilized—that is, the wrist and radio-ulnar joints—should be insisted upon from the first day. Of 111 patients treated during the four-year period 1925–8, the results in 92 were excellent, in 16 good, and in only 3 poor.

Sir WILLIAM WHEELER (Dublin) said that Colles in his original paper of 1814 gave a faultless clinical description but inaccurately placed the fracture too high on the radius, and did not refer to the fracture of the tip of the ulna. Sir William said he used the Robert Jones method of reduction and of splintage, and avoided any massage or wrist movements for three to four weeks. The aim of reduction should be to lengthen the posterior bony surface of the radius and to shorten the anterior. It was right to aim at and to teach perfect reduction, but a minor degree of displacement only delayed and did not prevent a good functional result. He thought the application of unpadded plaster splints was dangerous except in the hands of experts. Modern surgeons seemed to be reverting to the teaching of Colles, Smith, and Mcdonnell as regards both mechanism and treatment. Mr. W. A. COCHRANE (Edinburgh) emphasized the importance of reducing displacement, particularly the backward tilt of the lower fragment. After this backward tilt had been reduced there remained a gap in the cortex of the radius posteriorly which required a considerable time before it was soundly filled in with bone. On account of this pulping of the posterior cortex of the radius the backward tilt was apt to recur. He doubted whether it was advisable to inject a local anaesthetic into the haematoma as it might delay union. Cotton of Boston had pointed out that a Colles fracture was a fracture luxation of the radius and ulna about the head of the ulna, and therefore the head of the ulna should be the fixed point about which reduction was made. Mr. Cochrane's own practice was to reduce by the Robert Jones method and then to use the Cotton manœuvre—namely, to twist the whole hand about the head of the ulna into palmar flexion, pronation, and ulnar deviation. The surgeon should be responsible for the application of the splint and should himself maintain the reduction until the limb was safely splinted. It was unsafe to allow a masseuse to remove the splint for the first three weeks.

Mr. H. A. T. FAIRBANK considered that the presence or absence of involvement of the radio-ulnar joint had an important bearing on prognosis. He had often found it difficult to reduce a lateral displacement. He agreed that the backward tilt was the important element in the deformity, and that unless this was reduced the functional result was poor. It should be emphasized that the plane of the normal wrist-joint faced downwards and forwards, not directly forwards. He believed the type of splint to be immaterial, although expressing a personal preference for the Carr splint. Recurrence of the backward tilt after reduction was not infrequent, and he was therefore averse to early treatment by massage. Use of the limb should, however, be encouraged to avoid stiffness of the finger-joints and of the shoulder-joint. He expressed his complete ignorance of the pathogenesis of the trophic hand which occasionally followed a Colles fracture ; it was not due, in his opinion, to ischaemia or to incomplete reduction. Mr. G. R. GIRDLESTONE (Oxford) said that for splintage he used a circular plaster-of-Paris splint, applied over anterior and posterior strips of elastoplast. As soon as the plaster cast had set it was bivalved. The elastoplast adhered to the skin and the plaster to the elastoplast. The method gave two well-fitting, comfortable, and safe splints. Mr. B. WHITCHURCH HOWELL believed plaster to be dangerous except in the hands of those well accustomed to its use. After reduction he splinted the hand in ulnar deviation and full supination. Nitrous oxide anaesthesia was unsatisfactory, as the deformity might recur before there was time to apply splintage. Mr. WILSON (Toronto) said that displacement could not always be reduced. Unless it was reduced some radial deviation of the hand would persist owing to the shortening of the radius. He was emphatic on the advisability of conducting the reduction under the fluoroscope. His method of testing the efficacy of reduction was to see whether the wrist could be palmar-flexed to 90 degrees. He always used splints of plaster-of-Paris slabs. He insisted on the importance of splinting the hand in ulnar deviation by extending the plaster splint along the radial border of the second finger. Splintage for more than two to three weeks was unnecessary. Mr. GEORGE PERKINS said that Platt's figures had demonstrated that the results of Colles's fracture were good in 97 per cent. providing that (1) the fracture was diagnosed, (2) it was reduced, (3) it was splinted long enough, and (4) the limb was not allowed to " rust." Bad results were due to faulty teaching in respect of diagnosis and reduction. The student should be taught to diagnose the fracture by palpation and not by inspection ; the term " dinner-fork

deformity" should be deleted from the textbooks. The anterior surface of the radius should be palpated on the two sides as though a comparison was being made of the radial pulses; any abnormality in the contour of the anterior surface of the radius could thus readily be detected. The second fault in teaching was in not insisting on the necessity for a formal reduction under anaesthesia in every case of Colles's fracture. Unreduced Colles's fractures gave rise to disability on account of painful and limited movement at the radio-ulnar joint. This was because there was disalignment between the opposing articular surfaces of the ulna and radius. These articular surfaces could be re-aligned by the Baldwin operation. After this procedure the lower portion of the ulna ascended the forearm, and the articular surfaces of the ulna and radius automatically came into their normal relation, and, thereafter, painless rotation of the forearm was restored. Mr. F. Crooks (Nottingham) said that whatever form of splint was employed it should allow free use of the metacarpo-phalangeal joints. He agreed with the other speakers that there was a danger of recurrence of the deformity from too early removal of splints. He preferred brachial plexus infiltration as the method of anaesthesia. He thought the stiff shoulder, which so commonly followed a Colles fracture, was evidence of injury to the shoulder at the time of the accident. Mr. N. L. Capener (Exeter) suggested that the underlying cause of the trophic hand was an ischaemia. Mr. Wright (Toronto) agreed that correct diagnosis, reduction, maintenance of reduction for a sufficiently long time, and immediate active use of the limb were the essentials for obtaining a good result. Mr. R. C. Elmslie urged that students should be taught the principles of fracture treatment, and one of those principles was that a Colles fracture was not united at the end of fourteen days. His experience had coincided with that of most of the previous speakers, in that treatment by massage and early movement had resulted on occasions in recurrence of displacement. He, however, made use of the masseuse to teach and encourage the patient to use the limb. He had not found reduction under the fluoroscope of much service, and it was, moreover, a method out of reach of the general practitioner. He considered that every student should be taught how to make and to use plaster slab spiints.

In the afternoon a visit was paid to Queen Mary's Hospital, Carshalton, where Dr. Gordon Pugh gave a demonstration of the traction method of treating tuberculosis of the hip.

SECTION OF NEUROLOGY

Thursday, July 28th

Disseminated Sclerosis

With the President, Sir Farquhar Buzzard, in the chair, Dr. W. J. Adie opened a discussion on the aetiology and symptomatology of disseminated sclerosis.

Dr. Adie said that although it was now recognized that many of the reported cases of hereditary and familial disseminated sclerosis were examples of other disorders, it was certain that genuine familial cases did occur. Despite much investigation the aetiology and even the pathological nature of the disease were still in doubt. The modern tendency had rather been to emphasize the frequency of an insidious onset, but if the onset of the disease was taken as the appearance of the first symptom, then it was always sudden. Acute retrobulbar neuritis was often the first manifestation. The duration of the disease was said to range from a few months to twenty or thirty years. When the significance of acute retrobulbar neuritis and other characteristic early symptoms was better known a lower figure would be given for the average age of onset and a higher figure for the average duration of the disease. Dr. Adie dealt especially with acute retrobulbar neuritis. In a series of 118 cases a clear history of a severe attack of retrobulbar neuritis was obtained in forty-one. In twenty of these it was the first symptom, and in every instance it was an early symptom. For the present purpose the speaker reserved the term acute retrobulbar neuritis for cases characterized by (1) acute onset, (2) unilateral incidence, (3) central scotoma, and (4) tendency to recover. As a rule, recovery began within a week or two, and by the end of six weeks or two months was considered by the patient to be complete. Discussion was invited on the following statements: (*a*) that disseminated sclerosis was the only known common cause of acute unilateral retrobulbar neuritis as here defined, and (*b*) that apart from certain rare allied acute inflammatory diseases of the nervous system it was the only cause.

Dr. D. McAlpine said that the characteristic histological feature of disseminated sclerosis was the presence of areas of demyelination or destruction of myelin sheaths. Other conditions had also been described in which a similar patchy loss of myelin sheaths occurred; the commonest of these was acute disseminated encephalomyelitis. This condition came into prominence as a sequel of vaccination, but subsequently similar cases were reported following measles and other infectious fevers, as well as cases that arose spontaneously. The clinical picture of the condition was varied, and some instances might simulate closely acute cases of disseminated sclerosis. In many respects the histological changes resembled those seen in disseminated sclerosis, but certain cases showed features which were not found in this disease. Some observers considered that acute disseminated encephalomyelitis was merely an acute form of disseminated sclerosis. The speaker favoured the view of Redlich and others, who held that acute disseminated encephalomyelitis was a separate entity, and that when the initial phase passed off no further relapse need be expected, in contrast to the unhappy course of disseminated sclerosis. Among clinical features that seemed distinctive of acute disseminated encephalomyelitis were the occurrence of fever, the presence of pains in the limbs, loss of thermal sensibility rather than of the deeper forms of sensation, the fact that loss of vision was uncommon, and the presence of a normal cerebro-spinal fluid.

Dr. J. S. Collier referred to the household incidence of disseminated sclerosis as opposed to the familial incidence. He had on three occasions seen two patients entirely unrelated but who had been brought up in the same household stricken with the disease within a year or two. The obvious suggestion was that these three pairs were exposed to the same environment and the same infection. But against this he had known a mother and two daughters afflicted by the disease; the mother died young when her daughters were infants, and the two sisters had not even seen one another during the fifteen years preceding the onset of symptoms. If, therefore, there was any co-infection in these three people it must have been instilled at a very early date, and many years before the appearance of symptoms. Disseminated sclerosis would be a strange infective disease if now and then the infection was not conquered by natural bodily resources, and Dr. Collier believed that in some instances disseminated sclerosis did heal finally. He mentioned cases that had occurred within his experience. From the rapidity of the occurrence of many of the earlier symptoms he considered that they resulted from an acute oedema of the affected patch occurring in the course of the pathological process, which was followed by demyelination but not by axonic destruction. Although the lesions of disseminated sclerosis commonly occurred in any

region whatever of the central nervous system, only a few were ever permanently destroyed. The pyramidal elements suffered destruction most of all, and these were phylogenetically young. The same applied to the cerebellar elements, especially those for speech and for the higher visual movements. He suggested that the permanent symptoms of disseminated sclerosis were determined by the greater vulnerability of phylogenetical recent elements of the human nervous system.

Dr. R. S. ALLISON (Belfast) referred to the frequency of the disease in Ireland. The only recurring feature in the large majority of the cases he had investigated in Ireland and Wales (130 altogether) was that they obtained their drinking water from spring wells. There appeared to be some resemblance between the geographical distribution of disseminated sclerosis and goitre, and the connecting link between the two diseases might well be water, the importance of which had already been established in endemic goitre. Referring to the mode of onset and the physical and mental background, he said that the majority of the cases were of the dark-haired type, of asthenic build, and inclined to tallness. In a third of forty-two cases in which the past history was investigated closely, abnormalities in the personality as well as sensory and motor disturbances were present in childhood and for some time before the accepted date of onset. It was possible that this figure was an under-estimate, and that these were cases in which the onset of the disease appeared to be more the unmasking of a latent process or diathesis than the beginning of a new disease. Dr. C. P. SYMONDS gave results of the analysis of 171 cases of undoubted disseminated sclerosis that had come under his care. Of these, 34.7 per cent. were males and 65.3 per cent. females. The most frequent early symptom was some motor disturbance in the lower limbs (42 per cent.), then ocular symptoms (26 per cent.), and the most frequent age of onset was between 20 and 40 years ; in 37 per cent. the onset occurred from 21 to 30, and in 30 per cent. between 31 and 40 years of age. He had little doubt, however, of the occurrence of cases with an onset in the fifth and even in the sixth decade. Among the more uncommon symptoms were attacks of generalized tremor, herpes, and episodic mental disturbances. A definite history of retrobulbar neuritis occurred in 24 per cent. of his cases ; in eight of these the condition was bilateral. Dr. Symonds was inclined to agree with those who regarded the so-called " neuromyelitis optica of Devic " as a variant of disseminated sclerosis. Neither on the pathological nor on the clinical side could he see any line of distinction He illustrated this view with the description of a case.

Dr. C. WORSTER-DROUGHT agreed that genuine familial cases did occur, although it was often difficult to distinguish cases of familial disseminated sclerosis from some of the more unusual forms of heredito-familial ataxia. He had reached the conclusion that only three features could be relied upon to distinguish one disease from the other. These three features occurred in disseminated sclerosis, and not in heredito-familial ataxia. They were: (1) the presence or history of acute retrobulbar neuritis, (2) the occurrence of definite remissions, and (3) the presence in the cerebro-spinal fluid of a Lange curve of paretic type. One had seriously to consider the question as to whether many examples of so-called acute disseminated encephalomyelitis were in reality cases of disseminated sclerosis with an acute onset. He mentioned cases which in the acute condition might well have been taken for examples of the former ; their subsequent course, however, proved them to be cases of disseminated sclerosis. An aspect of the disease to which little attention had been paid was the possibility of occurrence of mental disturbance as an initial symptom. The nature of the mental disturbance was usually one of hypomania or confusion, and at the time of its occurrence there might be no definite physical signs of organic disease. He had known two cases in which retrobulbar neuritis occurred some twelve years after the disease was established. A positive Lange reaction in the cerebro-spinal fluid was of value as an aid to diagnosis, not only in established disseminated sclerosis, but also in retrobulbar neuritis.

Dr. F. R. FERGUSON (Manchester) referred to the problem of disseminated sclerosis in old age, and the frequency with which the disease began after 45. Broadly speaking, there were two groups of cases: (1) that in which the disease commenced in early life, and yet the patients lived on until 60 or 70 ; and (2) that in which the disease started in the late forties or early fifties. Although it was incontrovertibly established that the age of onset of at least 70 per cent. of the cases of disseminated sclerosis was between 20 and 40, there was a sufficient number on either side of these ages to demand attention. The statistics from the literature varied, but about 20 to 25 per cent. began over 40. From a review of 743 cases from the National Hospital, Queen Square, diagnosed as disseminated sclerosis, no fewer than ninety-two, or 12 per cent., were over 50 and ten over 60 at the time of discharge. It was notoriously difficult to follow up and prove the diagnosis in these cases, but one could not help being struck by these figures. Dr. Ferguson showed photomicrographs of typical sections of two cases in which the age of onset had been 55 and 56 respectively, and recorded two cases, aged 76 and 67, in which the disease had been in existence for over forty and forty-two years. There was no essential difference in type noticed clinically or pathologically, whether the disease began early or late. Dr. B. HALLEY STEWART dealt with the claim that had been made by Miss Chevassut that the alleged *Spherula insularis* was the virus responsible for disseminated sclerosis. He described his experiences and observations over a period of several months at the Halley Stewart Institute. Dr. J. LE F. BURROW (Leeds) laid stress on the defective statistics of early symptoms, particularly of eye symptoms, compiled in large hospitals. The infective aetiology was discussed and emphasized. He developed the theory that owing to the impermeability of the meninges, antibodies in the blood did not penetrate into the intercellular spaces in the central nervous system, and that measures most suited for treatment would be those designed to increase such permeability. The treatment found most useful by the speaker in disseminated sclerosis was that of intravenous novarsenobillon, given in a short course, and followed by lumbar puncture with drainage and the injection of the patient's own serum. To increase the penetration of possible antibodies the intravenous injection of hypertonic saline was done at the same time, and the foot of the bed kept raised for several hours. Dr. MACDONALD CRITCHLEY mentioned the incidence of familial examples of the disease, and referred to the presence of psychopathic tendencies in other members of such families. He described a case of typical disseminated sclerosis in a girl whose father had had the disease. Both this father's brother and sister were in institutions suffering from depressive psychosis, and their mother also had died in a mental hospital. He considered that there was an important endogenous side in addition to the possible element of infection. In his view disseminated sclerosis occurred in psychopathic families more often than could be accounted for by mere chance. Careful investigation of the family histories of patients would evoke psychopathic histories in other members of the family more frequently than in normal families. Also, in the case of many patients, there might be discovered something peculiar and suggestive in the history of their early

childhood. Finally, physical investigation might reveal a constitutional habitus. Dr. W. RUSSELL BRAIN described five cases of acute unilateral retrobulbar neuritis without signs of involvement of other parts of the nervous system. He regarded these as a variant of neuromyelitis optica, and pointed out that the recovery of vision was less complete than was usual in the retrobulbar neuritis occurring in disseminated sclerosis. He drew attention to the occurrence of autonomic disturbances in disseminated sclerosis, and mentioned acute ascending myelitis as an unusual mode of termination of this disease. Dr. J. GODWIN GREENFIELD dealt with certain pathological aspects of the disease. Although the presence of small-celled infiltration did not necessarily imply that the disease was inflammatory, there was much to justify the view that disseminated sclerosis was of this nature. In a few cases which could be claimed as neuromyelitis optica he had been struck with what he had never seen in disseminated sclerosis—that was, that the sclerosis was not a neuroglial sclerosis, but a fibrous tissue sclerosis. Dr. W. J. ADIE replied briefly to the various questions raised.

THE PATHOLOGICAL MUSEUM

It was perhaps unfortunate that owing to the large number of exhibits collected they had to be displayed in four rooms. This meant that a determined effort was required, and more time than usual given, if the whole was to be glanced at, much less examined in detail. The specimens and the manner of their exhibition were so uniformly excellent that they amply repaid both effort and time. There were sixteen sections, and little more than a general impression of the more prominent groups can be attempted in a review of the whole.

The medical section consisted of an admirable collection of specimens showing the association of generalized osteitis fibrosa and hyperparathyroidism, and a series of preparations and illustrations of coronary thrombosis. The results of coronary blockage, infarction, early and late myocardial rupture, fibrosis, and aneurysm were clearly demonstrated. Reproduction of the microscopical appearances and radiograms of barium-injected vessels completed the pathological picture, and a series of electrocardiograms showed changes produced by the lesions.

Spleens predominated in the surgical section. Ruptured spleens, varying from complete rupture to subcapsular tears, were shown. The part played by trauma in the production of splenic cysts was emphasized. Other exhibits, of less interest to the surgeon, included infective conditions, infarcts, and " sugar icing " spleens.

A comprehensive collection illustrating Sampson's theory of endometriosis and Professor Louise McIlroy's apparatus for the resuscitation of the newborn made up the section of obstetrics and gynaecology. In the part devoted to tropical medicine were demonstrations of the clinical features of yellow fever in man and its method of transmission. Rift Valley fever, climatic bubo, sprue, and leprosy were also explained by charts, pictures, and specimens. A large number of drawings set forth clearly seven types of skin disease, all of which could be cured by keeping the patient in bed and administering thyroid until hyperthyroidism was produced and maintained for ten days.

The section of oto-rhino-laryngology contained a large number of preparations of a wide variety of conditions, and included a unique series of specimens and lantern slides on nasal-sinus suppuration. In this section was one of the most interesting specimens in the exhibition: it was a rubber oesophagus which had been worn with satisfactory results and comfort for twenty-three years by a woman from whom a carcinoma of the pharynx had been removed. Pneumonoconiosis, including silicosis, silico-anthracosis, asbestosis, and experimental silicosis were illustrated by specimens, radiograms, and a large number of histological preparations, in the section of pathology. All interested in carcinoma must have been fascinated by the exhibition of a small tube of yellow crystals—a portion of the first crystalline carcinogenic hydrocarbon isolated from tar. This has produced tumours more rapidly than any synthetic compound so far examined. A series of benzanthracenes were shown, together with the lesions produced by them.

Good radiograms make excellent exhibits, and in the section of radiology there was a large number in connexion with many of the diseases which had been discussed in the various sections. The McGill University exhibit on the development of the heart and clinical classification of congenital cardiac disease was a model of what can be achieved in museum display by combining specimens, models, charts, and illustrations to show all aspects of a single disease. An unusual and very interesting section was that consisting of specimens made by mental patients and shown to demonstrate the results of occupational therapy. The catalogue was well got up, clear, and useful. All concerned are to be congratulated on a museum which for size and interest can hardly have been equalled in the history of the Association.

England and Wales

London School of Hygiene and Tropical Medicine

Sir Austen Chamberlain has received an offer from the chairman and directors of the Prudential Assurance Company to contribute a sum of £1,500 a year for a term of seven years to the funds of the London School of Hygiene and Tropical Medicine, of whose Court of Governors Sir Austen is chairman. The directors of the Prudential Company are profoundly impressed by the importance of the teaching and research in all branches of preventive medicine in which the London School is engaged, and have suggested—a suggestion entirely acceptable to the governors of the school—that the contribution shall be directly associated for the duration of the gift with the university chair of public health, held by the dean of the school as head of the Division of Public Health and Industrial Hygiene. The school, which was opened by the Prince of Wales in July, 1929, and took over the old School of Tropical Medicine in 1924, is in urgent need of additional donations and subscriptions to the extent of £10,000 a year to enable it to carry on its existing work, and Sir Austen Chamberlain, on behalf of the governors, has expressed his deep appreciation of so substantial a measure of support coming, when it is so badly needed, at such a difficult time in the country's finances.

The Ross Institute

The annual meeting of the Ross Institute on July 12th was overshadowed by the serious illness of Sir Ronald Ross and the death during the preceding twelve months of Sir William Simpson, who, as director of tropical hygiene, had played a distinguished part in founding and consolidating the work of the Institute. In the annual report reference was made to the India Branch, which had been endowed by the tea industry, and had performed most valuable prophylactic and research work. It was hoped that steps would be taken in the future to ensure the continuance of this Branch, despite the facts that the financial guarantees of the tea industry would terminate in July, 1933, and that the economic depression was still

very grave. Sir Charles McLeod, chairman of the Ross Institute, commenting on the annual report, pointed out how largely dependent the work had been on the generosity of the tea, rubber, and mining interests. With increasing financial stringency such help was necessarily diminishing. Whereas in 1930 there had been a credit balance of £1,300 in the income and expenditure account, there was a loss of £1,900 in 1931, and the loss during the current year would be considerably greater unless there was an increase in contributions during the next few months. All possible economies in the conduct of the Institute had been made.

Freedom of Pwllheli conferred on Dr. Wynne Griffith

At a special banquet on July 1st the Freedom of the Borough of Pwllheli was conferred on Dr. O. Wynne Griffith in recognition of his long and valuable services. Dr. Griffith has been a member of the Borough Council for forty-one years, during thirty-six years of which time he was an alderman ; he was mayor for eight years. He played a prominent part in schemes of harbour extension and uniting the South Beach and West End Parade. For thirty-seven years he was a member of the Carnarvonshire County Council, and since 1898 of the governing body of the Pwllheli County School. Dr. Richard Owen, president of the North Wales Branch of the British Medical Association, proposing the toast of " The New Freeman," mentioned that Dr. Griffith had been in practice for fifty-four years, and was largely responsible in 1925 for the success of the national eisteddfod at Pwllheli, being chairman of the executive committee. He had been president of the North Wales Branch twenty-two years ago, and had delivered an address of outstanding interest on physicians and surgeons in the time of Queen Elizabeth. Dr. Griffith's great life of medical, religious, and philanthropic service fully entitled him to the distinction of being the first medical freeman of Pwllheli. Dr. Griffith, after receiving the golden casket, commented on the immense importance of educating children so as to inculcate in them the ideals of service to the community.

Bequest for Research in Tuberculosis and Cancer

Under the will of Mr. James M. G. Prophit, a Calcutta merchant who died in 1924, the sum of £120,000 has just become available for medical research. By the instructions of the testator, his fortune was not to be released for this purpose until after the death of his sister, Miss Grace Prophit, the immediate beneficiary. Miss Prophit died in December last, and the residue of the estate has now been divided, according to the bequest, into two equal moieties, one to be applied to research in tuberculosis, and the other to research in cancer. A sum of £10,000 is appropriated to the Royal College of Physicians, to be used in tuberculosis research, with a further £5,000 for similar research at a particular hospital or sanatorium, to be selected by the Royal College, together with £5,000 to Westminster Hospital. For cancer research, similarly, £10,000 is allocated to the Royal College of Surgeons of England, £5,000 to the Radium Institute, working in co-operation with a hospital or institution to be selected by the Royal College, and £5,000 to the British Empire Cancer Campaign. In addition, in respect both of tuberculosis and of cancer, two studentships, each of £500 per annum, are to be created during a period of five years, with a further £200 per annum, if required, for travelling expenses in connexion with any of the studentships. The selection for studentships and the award of travelling grants are left to the recommendation, in the one case of the Royal College of Physicians, and in the other of the Royal College of Surgeons.

India

The King Institute, Guindy

In his report on the researches conducted during the year ending September 30th, 1931, at the King Institute of Preventive Medicine, Guindy, Madras, the director (Lieut.-Colonel H. H. King, I.M.S.) states that investigations now brought to a conclusion show that *X. cheopis* is the most important flea vector of plague in this Presidency. The more common flea *X. astia* carries plague very poorly, and is not incriminated in the continuation of this infection from one season to another. A more potent vaccine lymph has been obtained by the addition of a second buffalo calf to the series of animals used in its preparation. It is suggested that this extra passage through a buffalo calf tends to kill out the weaker small-pox strains without seriously damaging the stronger ones. Various strains of streptococci have been recovered from lymph batches ; they have been traced to infection from the skin of calves, are held to be saprophytes only, and are not considered to have any toxic powers. Methods are being devised, however, to prevent these organisms from gaining access to lymph in future. Anti-vaccinia serum has been proved to be effective against vaccinia and variola, and it is possible that a valuable prophylactic and therapeutic agent against small-pox has been obtained. For treatment the doses have to be large, and consequently various methods of concentration are being tested. Complaints having been received of severe reactions following the injection of stock cholera and T.A.B. vaccines, improvements were introduced into the preparation of these vaccines resulting in the diminution of their protein content. Saline solution instead of broth is now used for washing away the growth from the primary seed culture tubes, and the water of condensation in the larger bottles in which growth finally occurs is now removed, for it has been found to contain much protein. Evidence has been obtained of the efficacy of cholera bacteriophage in preventing epidemics of this infection.

Government Ophthalmic Hospital, Madras

In his report for 1931 on the progress of the Government Ophthalmic Hospital, Madras, Lieut.-Colonel R. E. Wright, I.M.S., the medical superintendent, provides a mass of practical information, together with a critical consideration of various diseases of the eye. At this hospital special attention is being paid to the technique of cataract extraction. Colonel Wright believes that the entry of blood into the anterior capsule at the time of operation is one of the most serious complications of capsulotomy, because the mixture of blood and cortex is liable to give rise to the most troublesome after-cataracts, apart from infection. He discusses why this difficulty appears to be greater in South India than in Europe and America, and suggests that it may be due to an essential difference between the Mediterranean and the Nordic type of eye. In this connexion he refers to the poor response of the Indian eye to mydriatics—mainly due to the deeply pigmented iris being more rigid. As regards the production of a large central aperture in the anterior capsule, the procedure at present favoured is the construction of a big tongue-shaped flap in the capsule, secured by the knife at the time of making the section. The flap is subsequently torn off at its hinge with a suitable forceps, either before or after the delivery of the nucleus. The objection raised to this procedure is that it is not simple enough. In glaucoma sclero-corneal trephining is the usual operative treatment. During the past year attempts have been made to find suitable cases of keratomalacia in order to test the value of Harderian

gland suspensions. So far, no real evidence has been obtained that such suspensions have any influence on the course of the disease, but it is suggested that a fairer test would be to select cases of pure xerosis of the conjunctiva, with smokiness and Bitot's patches, which have been proved not to be due to deficiency ; this line of investigation is being pursued. Certain types of quiet iritis of unknown aetiology seem to have their origin in the alimentary tract, and improvement has followed attention to the condition of the bowels. No definite type of characteristic iritis with this aetiology has, however, yet been defined. Extensions to the present refraction room at the hospital are nearing completion, but the needed building and equipment reforms have been postponed owing to lack of funds. Staff reduction has also been necessary, and the allotments for instruments and books have had to be reduced. Changes in the organization of the hospital are contemplated, with a view to effecting economy in salaries. More recently the principle of introducing voluntary workers has been tried, the eventual goal being presumably the replacing of Indian Medical Service officers and Indian Provincial Medical Civil officers by specialists drawn from the independent medical profession of the locality. Unfortunately grave difficulties have been experienced in obtaining and holding members of the younger generation who are likely to be the principals of the future, and only the employment of whole-time paid members of staff renders the present transitional arrangement workable.

Correspondence

TUBERCULOSIS AND THE MILK SUPPLY

SIR,—If, instead of writing to the United States of America to find out what was going on at Liverpool and Southampton, Dr. Halliday Sutherland (July 23rd) had asked any fourth-year medical student of his acquaintance as to the percentage of animals which react to the tuberculin test, he might have saved himself some trouble. Dr. Sutherland's letter cannot be allowed to go unanswered. He charges certain Government departments with apathy. He mentions correspondence with the Local Government Board. As this respected body was laid to rest some years after the demise of the late lamented Queen Anne, Dr. Sutherland might surely have chanced his arm with a more modern body such as the Ministry of Health. Had he done so, the prospects are fair that he would have been told that the number of convictions of butchers for selling tuberculous meat is no criterion whatsoever as to the presence or absence of tuberculous meat exposed for sale, or kept with a view to sale, in butchers' shops.

Take Belfast for example. There were no convictions of butchers for the above reason in 1931. This is not due to apathy or the want of competent inspection. It is due to the fact that no private slaughterhouses are allowed, that all meat used in the city is killed in the municipal abattoir under whole-time veterinary inspection, and that any meat brought to the city for sale must first be taken to the abattoir to pass the city veterinary surgeon. Further, qualified inspectors visit the 400 butchers' shops in the city. Where any meat is "unsound, unwholesome, or unfit for the food of man," the butcher rings up the department—he cannot take the risk of being found to have such on his premises. The butcher is not necessarily a rogue bent on selling caseating chewing gum to the public. Dr. Sutherland's reply to this is that it is obvious there are too many local authorities which tolerate private slaughterhouses, and the smallness of many authorities is such that their sanitary inspectors have little or no chance to acquire or maintain a satisfactory standard of meat inspection skill. This is admitted, but it does not excuse a charge of apathy.

If Dr. Sutherland will read, say, the latest edition of Wade's *Constitutional Law*, he will see that the Ministry's policy is to have larger combined areas, which obviously carry whole-time qualified service. Apathy—no indeed! Surely Dr. Sutherland is acquainted with recent enactments and Orders which deal with animals found clinically suffering from tuberculosis, and the steps taken therewith ; the same with regard to milk. His praise of pasteurized milk is deserved, but he should qualify it by saying that all that is described as pasteurized is not necessarily so.

Dr. Sutherland flirts with the idea that another little drink (of tuberculous milk) won't do us any harm! Surely this dangerous theory as to immunization died years ago of debility at birth. If Dr. Sutherland will come over to Belfast we will endeavour to give him a nice drive round and so dispel the mystic doubts and fears that apathy reigns, as he fears it does in some Government departments in England. Only please let him not write to Canada or the South Seas to find out whether we are apathetic or are doing our job in Northern Ireland.—I am, etc.,

CHARLES S. THOMSON,
Medical Superintendent Officer of Health.

Belfast, July 25th.

THE ORIGIN OF TUMOURS

SIR,—Mr. Lockhart-Mummery replies to my question by asking me "Why is it more difficult to believe that the active agent which is thus capable of retaining its vitality is some portion of a cell, rather than a virus, which is also a living substance? "

I should like to restate the elementary facts in order to avoid all misunderstanding. Fowl tumours are propagable by means of cell-free filtrates and by means of desiccated tumour tissue. I believe that active filtrates and active dried tissue owe their power to induce tumour formation to the presence of a virus which is able to infect specific cells of an inoculated fowl. The evidence upon which this belief is based was published last November in a book in the writing of which I enjoyed the collaboration of my colleague Dr. Purdy. The fact that a virus can withstand drying is not new ; many viruses and some of the larger bacteria can be dried and retain their viability.

Many authors have suggested that the active agent in a tumour filtrate (or in desiccated tumour tissue) is a non-living substance derived from the tumour cell. But Mr. Lockhart-Mummery has made an entirely new suggestion. He puts forward the view that a cell-free tumour filtrate contains a chromosome which, when injected in a fowl, grows into a complete cell. The suggestion is apparently derived from observations made by Dr. Ludford, who may or may not support Mr. Lockhart-Mummery's views. I desire to ask Mr. Lockhart-Mummery again whether he believes that a chromosome, separated from its cell of origin and dispersed in saline, can grow again into a complete cell? And further, whether he believes that chromosomes may be desiccated and retain their power to grow again into cells?—I am, etc.,

W. E. GYE.

Mill Hill, N.W., July 29th.

MENTAL HEALTH AND EDUCATION

SIR,—At a recent meeting of the Section of Mental Disorder the officers of the Section invited Mr. Cuthbert Blakiston, headmaster of Lancing College, to take part in the discussion on mental health in relation to education. A great deal of publicity has been given to Mr. Blakiston's

contribution to the discussion, but it is unfortunate that, owing to important phrases having been omitted, some of those which are published convey a different meaning from that which would have been conveyed had they not been separated from the context of his speech. As a result, the headmaster's personal experience of the abnormal in school life has in certain cases been made to appear as his experience of the normal. Many people have drawn erroneous conclusions from reading these reports, and it is hoped that this letter may help to correct such impressions.—We are, etc.,

MAURICE CRAIG,
President of the Section of Mental Disorder, B.M.A. Centenary Meeting.

G. W. B. JAMES,
J. R. REES,
Honorary Secretaries, Section of Mental Disorder.

London, July 30th.

STRYCHNINE POISONING

SIR,—The annotation in the *British Medical Journal* of July 23rd on the use of barbiturates in strychnine poisoning in America is interesting. Having had extensive experience of the use of chloral in tetanus, as well as other drugs in other emergency cases—morphine in hydrophobia, and also for intense and prolonged pain—I was forced to the conclusion that the appropriate doses of these, among other drugs tolerated, depended on the patient's condition, and not on the pharmacopoeial dosage. A case of tetanus will carry three or four times the dose of chloral which an ordinary patient will stand. When in India I was once called out at midnight to a case of strychnine poisoning in a European. My dispensary was open all night, and was quite near. I told the dispenser to make up an ounce of chloral in 8 ounces of water and to give me a 20 c.cm. syringe. For the minimum of time I was with the patient the extreme urgency was evident. I injected 60 grains into each great pectoral muscle. He got gradually quiet, until in half an hour he was fast asleep. I went home and told them to send for me as soon as he awoke. Six hours later I was called. He was awake, and the spasms were on. I gave him another 60 grains into each flank, and waited for twenty minutes, when he was again asleep. I was called again six hours later; he was awake, and the spasms were on. I gave him another 60 grains into each hip. In twenty minutes he was asleep, slept for twenty-four hours, and had no more spasms: he had had six drachms of chloral in twelve hours. For many days ecchymoses were evident all over his body, the result of the spasms, and coughing or movements were very painful on account of similar violence to the muscles. My idea was that if I could control the spasms for twenty-four hours he would have time to eliminate the strychnine. —I am, etc.,

HENRY SMITH, C.I.E.,
Lieut.-Colonel I.M.S.(ret.).

Sidcup, July 23rd.

SUBCUTANEOUS INJECTION OF OXYGEN

SIR,—Dr. D. C. Welsh recently discussed the subcutaneous injection of oxygen and carbon dioxide with oxygen with regard to treatment of anoxaemia. A report of his paper appeared in your issue of July 23rd. It is not the beneficial results which are under consideration at the moment, but Dr. Welsh's explanation of the results. The report says:

"In actual practice doses of 150 to 500 c.cm. were satisfactory. As soon as injection was commenced the absorption of oxygen began, as was indicated by the slowing down of the rate of respiration. The blood promptly assumed a brighter colour, and the haemoglobin absorbed as much oxygen as it could hold, the saturation rising to 100 per cent. instead of to the normal 96 per cent. . . ."

This point has been studied by physiological research, and it was proved that after such injections the rate of absorption of oxygen by the tissues was too slow to affect the saturation of the blood or to relieve anoxaemia. This information was referred to in a previous letter in the *British Medical Journal* (August 11th, 1928, p. 274) in reply to similar incorrect statements.

I have carried out many such injections into animals, and the rate of absorption of oxygen is exceedingly slow. Dr. Welsh admits this himself: "The greater part of the dose remained at the site of injection, serving as a reservoir and continuing the action of the oxygen for two or three days." If, then, some of the 500 c.cm. of oxygen is still there at the end of two days, the average rate of absorption per minute must be only $\frac{500}{48 \times 60}$ = 0.18 c.cm. A man requires 250 c.cm. of oxygen per minute, so that any therapeutic value lasting two days must be due to only 0.18 c.cm. of this amount. This seems absurd.

The correct method to prove whether the injection of oxygen relieves respiration is to measure the oxygen absorbed by the lungs before and after such an injection. This has been done recently with animals by Dr. Singh of Rangoon, and the results, which will be published shortly, indicate a very slow rate of absorption of oxygen by a large area of subcutaneous tissue.—I am, etc.,

J. ARGYLL CAMPBELL.

National Institute for Medical Research, Hampstead, July 29th.

A PERSONAL EXPLANATION

SIR,—I understand that it has come to the knowledge of a section of the profession that certain misunderstandings and differences arose between the Medical Defence Union and myself, as the result of which it was decided that I should place my defence in the hands of my own solicitor in the recent legal action in which I was involved. I am asking you to insert this letter in order that it may be known as widely as possible that these misunderstandings have now been completely cleared up, and that the Medical Defence Union has acted fairly and generously in assuming responsibility for the whole of the heavy costs involved in my successful defence. It was impossible to recover these costs from the plaintiff, and in the absence of the Union's action they would have been my liability. —I am, etc.,

Clifton, Bristol, July 27th. ERNEST W. HEY GROVES.

LIMITATION OF ULTRA-VIOLET THERAPY

SIR,—It is hoped that you can find space for a comment, by one of the "instrument makers" concerned, on the letter from Dr. Turrell published in your issue of July 23rd. We speak as a company of special standing in relation to actinotherapy, whose lamps he specifically mentions. At the same time we trust that this letter may be taken not as an individual expression, but rather as typical of the rejoinder which any manufacturer of standing would give.

Clinical results must be a final criterion, and to deal with these first Dr. Turrell refers to "the failure of American dermatologists to obtain satisfactory results in the treatment of boils and alopecia areata." In these two specific conditions successful results have been published by Sampson, Bernstein, Oliver, Macdonald, Fox, Westermann, Kime, Stewart, Lyons, Anderson, *et multis aliis*. His deduction that their "failure" may be due to the fact that the tungsten arc is not used in America is therefore erroneous. These practitioners used the Kromayer lamp.

Again, in speaking of the Kromayer lamp Dr. Turrell admits that it has "certain advantages," counterbalanced (in his view) by "certain disadvantages" when treating "ulcerated and suppurating surfaces . . . the apex of an incipient boil," etc. Yet again, in these very conditions, his colleagues, who incidentally have abundant experience of the open arc, have found the Kromayer lamp outstanding in its valuable results.

It is by no means our province to decry the therapeutic results which can be attained with other types of actinotherapy lamps. The progress of this branch will best be furthered by thorough investigation of results from all types. In this connexion it is relevant to note that, in America, as elsewhere, the quartz mercury arc remains the apparatus of choice after extensive experimentation with other types.

On the question of costs, Dr. Turrell states that the actinotherapy lamp of to-day is "expensive and complicated . . . fitted with many useless movements." This is simply not the case, unless he is referring to equipment that is not given general recognition. It is manifest that no experienced manufacturer, under present economic conditions, would wilfully add superfluous accessories to his apparatus, knowing that in doing so he only created unnecessary marketing difficulties. Dr. Turrell apparently considers that the initial cost of apparatus is so important as to preclude consideration of operating cost. This is fallacious. It is easily demonstrable that the physician misguided enough to purchase a "cheap" lamp of the type advocated, even if he use it only one hour daily for a year, will be heavily out of pocket after paying his bills for current and electrodes compared with his colleague who has purchased a "beautifully chromium-plated apparatus" embodying a quartz burner.

Manufacturers exist only by serving the profession, and are eager to overcome any "disadvantages" or "unnecessary" gadgets in their apparatus. Careful constructive criticism on these lines from thinking medical men will always be accorded a ready hearing by any manufacturer of repute.—I am, etc.,

D. A. JONES,
Director, British Hanovia Quartz Lamp Co. Ltd.

July 29th.

INSULIN DIABETICS AND CARBOHYDRATE DIET

SIR,—In reply to Dr. A. S. Watson's letter in your issue of July 23rd the injections were usually reduced to once daily in those cases not requiring more than 20 units daily.—I am, etc.,

CHARLES S. D. DON.

Manchester, Aug. 1st.

M.M.S.A.

SIR,—The review of the changes in the medical profession and advances in medicine during the last fifty years, delivered by Sir Humphry Rolleston in his Bolingbroke Lecture and published in your issue of July 23rd, is so comprehensive and yet, in view of the ground covered, so delightfully compact that any plea on behalf of an omitted item is made with considerable diffidence. Under the heading of "Special Diplomas and Post-Graduate Teaching," however, I feel that the diploma of Mastery of Midwifery of the Society of Apothecaries of London (M.M.S.A.) makes appeal on such valuable grounds as to merit recognition. The qualification is not registrable by the General Medical Council, but is a recognition granted by a competent authority that a legally qualified medical practitioner has, by intensive study and practical experience, acquired a special knowledge of ante-natal care, midwifery, and infant welfare, and the application thereto of the principles of preventive medicine and personal and general hygiene. The importance of these matters to the future of the race cannot be overestimated, and the tests imposed are intentionally stringent in order that admission to the Mastery may indicate a thorough competence to undertake, and to supervise, the responsible control of maternity and child welfare work.—I am, etc.,

HENRY COOPER,
Registrar, Society of Apothecaries.

London, E.C., July 23rd.

Obituary

JOHN FRANCIS CUNNINGHAM, F.R.C.S.

Surgeon, Central London Ophthalmic Hospital

The untimely death on July 13th of Mr. J. F. Cunningham has removed from the ranks of ophthalmologists one who was greatly liked and equally esteemed by his professional colleagues. Born at Kobe, Japan, 56 years ago, the elder son of J. K. Cunningham, he was brought to England at the age of 12. His family settled at Axminster, and after a brief period of preparatory tuition he entered Sherborne School. His interest and affection for his school were quickly aroused and never flagged. In later years he became closely connected with the school and took an active interest in its welfare; for ten years preceding his death he was secretary to the Sherborne Old Boys Society. He spared no effort in this labour of love, and during his tenure of office the society grew steadily in numbers and the annual dinners became more and more successful.

In 1894 Cunningham became a student at St. Thomas's Hospital, obtaining the diploma of the Conjoint Colleges in 1900 and the F.R.C.S. in 1905. His professional career after becoming qualified was one of constant activity. At St. Thomas's he held the posts of house-surgeon and ophthalmic house-surgeon, and later that of ophthalmic registrar, being the first occupant of that office. He was also demonstrator of physiology in the Medical School, and house-physician at Bethlem Royal Hospital. His studies in the branch of medicine to which he devoted himself were continued at Moorfields Eye Hospital, where he worked assiduously for several years as chief clinical assistant. In 1910 he joined the staff of the Central London Ophthalmic Hospital; in 1920 he became ophthalmic surgeon to St. Charles's Hospital (formerly St. Marylebone Infirmary) when this post was established. He was ophthalmologist to Bethlem Royal Hospital and honorary ophthalmic surgeon to several charitable institutions. In the war Cunningham held the rank of major in the R.A.M.C., and was on service in France from March, 1915, to December, 1918, as ophthalmic surgeon. During the latter part of this period he was engaged chiefly in the control and treatment of trachoma among the labour corps of several thousand Egyptians and Chinese. The problem was very large; it was faced with decision and carried out with astonishing success. In a paper read before the Ophthalmological Society in 1918 (jointly with J. Wharton) Cunningham was able to say: "We have no knowledge of the disease spreading in any instance to the civil population or to our own troops"—a notable tribute to the efficacy of the measures adopted and the thoroughness with which they were carried out. His war services were recognized by mention in dispatches and the award of the O.B.E.

He wrote several papers on ophthalmic subjects, but his medical activities were more clinical than literary. In his professional work at hospital and in private he was very thorough and painstaking, sparing no effort on behalf of his patients. He was recognized as a clear and successful teacher. As an athlete he was prominent at school and hospital. He won the mile at his hospital

sports in three successive years and played Rugger for the hospital and for the United Hospitals, acquiring the common badge of Rugby footballers, a thick ear. Although of a retiring disposition his warm-heartedness and sincerity quickly became apparent to those who gained his friendship; and as the writer of this notice is well aware he was a trusty and loyal colleague. He leaves a widow and children to mourn the loss of a devoted husband and father; to his many friends he leaves a memory which is altogether pleasant.

SIR CHARLES BURTCHAELL, K.C.B.

Lieut.-General A.M.S.

Lieut.-General Sir Charles Henry Burtchaell, Colonel Commandant R.A.M.C., K.C.B., C.M.G., K.H.S., died on July 28th after an operation in Queen Alexandra's Military Hospital, Millbank, aged 65. He was born at Kilkenny on August 30th, 1866, the son of Mr. Peter Burtchaell of Brandondale, County Kilkenny, and was educated at Trinity College, Dublin, where he graduated B.A., M.B., B.Ch., and B.A.O. in 1889, subsequently taking the D.P.H. at Trinity College, Dublin, in 1906.

He entered the R.A.M.C. as surgeon captain on July 28th, 1891, and on May 20th, 1898, was promoted to surgeon major, a special promotion for his services in the Tirah campaign, which gave him five years' seniority over his contemporaries. He was the last officer of the R.A.M.C. promoted to surgeon major before the grant of military titles. He became lieutenant-colonel eight years later, and was promoted to colonel in the long war promotion list of March 1st, 1915, to major-general on December 26th, 1917, and to lieutenant-general on June 3rd, 1919, on appointment as Director of Medical Services in India, retiring on September 6th, 1923. He served in the campaign on the North-West Frontier of India in 1897–8, taking part in the actions of Chagri Kotal and Dargai, in the capture of the Sampagha and Arhanga Passes, the reconnaissance of the Saran Sar, and the operations in the Waran Valley and the Bara Valley, was mentioned in dispatches in the *London Gazette* of April 5th, 1898, was specially promoted to surgeon major, and received the frontier medal with two clasps. He next served in the South African war in 1899–1902, when he took part in the advance on Kimberley, including the actions at Belmont, Enslin, Modder River, and Magersfontein, and in other operations in the Orange Free State and the Transvaal, including the actions at Venterskroom and Lindley, was mentioned in dispatches in the *London Gazette* of July 29th, 1902, and received the Queen's medal with four clasps and the King's medal with two clasps. After the war he was appointed principal medical officer of the South African Constabulary, and held that post for three years, 1902–5.

Before the great war he was serving as Assistant Director-General in the War Office, and in that capacity was responsible for the allotment and mobilization of the medical units of the Expeditionary Force until he was sent abroad himself in October, 1914. There he served as A.D.M.S. at headquarters, and when Lieut.-General Sir Arthur Sloggett retired in May, 1918, succeeded him as Director-General of the Medical Services of the British Armies in France. He was mentioned in dispatches eight times, in the *London Gazette* of February 17th and June 28th, 1915, January 1st, 1916, January 4th, May 29th, and December 24th, 1917, and May 25th and December 30th, 1918. He received the C.M.G. in 1915, the C.B. in 1917, and the K.C.B. on January 1st, 1919; also the Legion of Honour. On June 1st, 1918, he was appointed an Honorary Surgeon to the King. After the war his University gave him an LL.D., and the Irish College of Surgeons an honorary Fellowship; and in 1925 he was appointed a Colonel Commandant of the R.A.M.C. He married Bertha Marcella, daughter of Mr. J. G. Auret of Johannesburg, and had two daughters.

The following well-known foreign medical men have recently died: Professor Moritz Katzenstein of Berlin, an authority on plastic surgery and operative orthopaedics, aged 59; Dr. James Birney Guthrie, professor of medicine, Louisiana State University Medical Centre, aged 56; Dr. John Farquahar Fulton, emeritus professor of ophthalmology and oto-rhino-laryngology, Minnesota Medical School, aged 73; Dr. Willy Meyer, emeritus professor of surgery, New York Post-Graduate Medical School and Hospital, aged 73; Dr. Jacques Silhol, professor of clinical surgery at the Marseilles faculty of medicine, aged 58; Dr. Pierre Teissier, professor of infectious diseases in the Paris faculty, member of the Académie de Médecine, and commander of the Legion of Honour; and Dr. Glebowsky, medical officer of health of Moscow, aged 55.

Medico-Legal

RENT-FREE ROOMS: AN INCOME TAX PROBLEM

The position of individuals having the rent-free use of a house or rooms is somewhat confusing, because the question of liability to taxation of the benefit so accruing depends in part not so much on the nature of the benefit as on the status of the person or body of persons employing the individual using the rooms. The question in each case will, of course, be governed either by statute law or case law, and it may be convenient to deal with the matter under those heads.

Statute Law

(*a*) Rule II of No. VII, Schedule A, of the Income Tax Act of 1918 provides that houses or rooms belonging to the Crown and occupied by an officer of the Crown are chargeable to tax on their annual value upon the individual officer. This provision was apparently designed to cover such cases as rent-free rooms in prisons, naval and military barracks, or hospitals, etc. It merely brings the officer concerned into the position of paying tax on invisible income to the same extent as he would if he had larger emoluments and, like the great majority of taxpayers, paid his rent out of his taxable income.

(*b*) Under Rule I of No. VI, Schedule A, the public buildings, offices, and premises belonging to a hospital are exempt so long as they are not occupied by an officer whose total income amounts to £150 or more. Where rooms, etc., are occupied by an officer having such an income the hospital authority is chargeable on the value of such rooms (Governors of Sutton's Hospital in Charterhouse *v.* Elliott), but whether the individual officer would be liable to recoup the hospital for the tax paid on the value of his rooms is a question that has not been tested in the courts, and, we imagine, would be very unlikely to be the subject of litigation.

(*c*) With regard to ordinary property—that is, that not occupied by either of the special classes mentioned above—the statutory rule is that income tax on the rental value is chargeable on the "occupier." If he pays rent the tax is deductible *pro rata* from the rent when paid; if he is the owner the burden of the tax remains on his shoulders, and represents the taxation of the benefit derived from his ownership of the property.

Case Law

It will be realized that, in applying the general rule above, questions arise as to who precisely is the "occupier" who should pay, and bear the burden of, the tax. The leading case on this point is that of Tennant *v.* Smith, which was decided by the House of Lords in 1892. The point in issue was whether a bank manager residing in rooms over a bank was liable to pay tax on the value of the rooms which he occupied rent free. The

case was decided against the Crown on the ground that there were certain restrictions as to the use and rights of tenancy of the rooms, and that the advantages of the occupation were not received in money or in a form capable of being converted into money—for example, the rooms could not be let by the occupier. With certain modifications, which are not relevant to the present purpose, that decision remains sound law to-day. Consequently where an assistant is provided with furnished or unfurnished rooms, which he has merely the right to use and not to let, his principal is entitled to treat the cost of supplying that accommodation as part of his professional expenses, but the assistant is not liable to account for tax on the value of the benefit which he receives in that way. An exception to this would arise if the assistant had complete use and full control of the whole premises so that he became the legal "occupier" of the house.

There is, however, one special type of case which it may be advisable to distinguish. Cases have occurred where an employer has provided free quarters, and sometimes free board, on the terms that a specified deduction for such benefits shall be made from the nominal salary stated in the agreement for service. In such cases liability attaches to the nominal amount, although part of it does not reach the employee in cash (Cordy *v.* Gordin, 1925).

UNREGISTERED PRACTITIONER SENTENCED

At the Central Criminal Court on July 21st, Richard William Starkie, aged 56, an unregistered medical practitioner, of Oakley Square, St. Pancras, was found guilty of using an instrument with intent to procure the miscarriage of a woman named Edna May Meredith, a shop assistant, and was sentenced to eighteen months' imprisonment. In his evidence the defendant, who denied the charge, stated that he was struck off the *Medical Register* ten years ago. He had previously been for eleven years a police surgeon, and he had made a special study of gynaecology, and had held an important post in a gynaecological hospital. He maintained that he was entitled to carry on his practice as a doctor, although unregistered. The only requirement was that he should not pretend to be a registered medical practitioner.

After the defendant had been found guilty, it was stated by the police that in September, 1921, Starkie was sentenced at the Central Criminal Court to nine months' imprisonment for administering a noxious thing with intent to procure miscarriage, and in 1929 he was convicted of procuring drugs. Mr. Justice Roche said that in view of the fact that the defendant had not been before the court during the last ten years on this kind of charge he would refrain from passing a sentence of penal servitude.

Universities and Colleges

UNIVERSITY OF OXFORD

At a congregation held on July 30th the following medical degrees were conferred:

B.M.—F. Hawking, H. G. H. Waters, G. B. Malone-Lee, J. L. Ryce, W. H. Greany, A. J. E. Edelsten, R. H. Bolton, R. L. H. Townsend, Mrs. Caroline E. Nicholson.

UNIVERSITY OF LONDON

At the June matriculation examination 205 candidates passed in the first division and 1,100 in the second division; 45 took the supplementary certificate in Latin.

The following candidates have been approved at the examination indicated:

M.D.—*Branch I* (*Medicine*): H. G. Close, M. M. Cowasjee, Marjorie M. Dobson, C. N. Evans, I. Gordon, M. Kremer, Florence Louis, *I. McPherson, Anna P. Montgomery, R. K. Price, T. N. Rudd, J. G. Scadding (University Medal). *Branch II* (*Pathology*): Ruby O. Stern. *Branch III* (*Psychological Medicine*): M. Mackenzie, Muriel L. M. Northcote, D. N. Parfitt, Mary E. Tyars (H. and S.S.), Hilda M. Weber. *Branch IV* (*Midwifery and Diseases of Women*): F. S. Cooksey, Greta Hartley, F. Heber, Marion Ravell, F. R. Stansfield (University Medal), Dorothea C. Wigfield. *Branch V* (*State Medicine*): E. J. de Verteuil, R. D. Gross, W. H. S. Wallace. *Branch VI* (*Tropical Medicine*): R. C. Amies.

* Awarded a mark of distinction.

The degree of M.Sc. (Physiology) has been awarded to W. R. Spurrell (Guy's Hospital Medical School).

ROYAL COLLEGE OF SURGEONS OF ENGLAND

An ordinary meeting of the Council was held on July 28th, when the President, Sir H. J. Waring, was in the chair.

Sir Arthur Keith was appointed Master of the Buckston Browne Research Farm. Mr. W. Sampson Handley was re-elected a member of the Executive Committee of the Imperial Cancer Research Fund.

Diplomas of Membership were granted to the following candidates who had passed the examinations in medicine, surgery, and midwifery of the Examining Board in Enlgand:

Towhida Abdel-Rahman, H. Ackers, R. W. F. Alles, F. C. Angier, *H. Barcroft, V. H. Barnett, W. N. W. Barns, C. H. Bateman, C. G. Batty-Smith, *F. H. Bentley, R. H. Berry, F. R. Bettley, G. A. Betts, R. N. Bhatia, J. D. H. Bird, S. E. Birdsall, R. N. Biswas, J. R. Blackburne, Marjorie Bolton, C. P. F. Boulden, T. Bromberg, Ethel D. M. Brook, D. G. W. Brown, L. I. S. Campbell, B. Cates, B. Chandra, J. W. Cheetham, A. H. Chenard de la Giraudais, S. J. Chesser, T. A. Connold, Gwendolen N. Cook, P. T. Cooper, A. C. Cox, C. F. Cumings, J. Cunard, Anna V. K. Cyriax, Phyllis E. Dain, D. T. Davies, W. H. D. Davies, S. Chandra De, A. K. Deb, L. W. B. Dobbin, N. M. Durrani, R. M. Ebeid, F. R. Edwards, M. H. Evans, W. J. M. Evans, T. B. Field, R. J. K. Fleming, F. E. Fletcher, D. H. Fulton, A. H. Galley, D. W. C. Gawne, P. A. I. Gorer, C. H. Gray, N. Green, Phyllis N. Greene, A. K. Guha, M. A. F. A. Hadi, M. Hafezi, J. Halperin, R. J. C. Hamilton, J. C. Hardy, K. W. Hardy, E. R. Hargreaves, J. B. Harman, L. P. Hodgson, J. S. Horsley, T. G. Hovenden, J. Howkins, M. G. H. Hughes, W. Hunt, A. D. Iliff, Ursula Y. im Thurn, E. James, J. R. E. James, W. L. James, C. G. Jones, J. E. Jones, Katherine M. Jones, W. W. Jones, M. Katz, B. S. Kaushal, Agnes V. Kelynack, G. W. Kendrick, M. Klass, L. O'N. Knox, C. P. Lanyon, Annie Lawson, Z. Lefkovitz, A. R. R. Le Fleming, Gladys A. R. Lenanton, Peggy Levi, P. Lewis, R. S. Lewis, L. H. B. Light, S. Livni, T. E. S. Lloyd, J. L. Lovibond, M. J. F. McArdle, J. C. McGregor, Mary A. McKean, J. D. MacLeod, H. A. Magnus, R. A. Manclark, J. I. Maran, Lois M. Marris, Gwendolen E. Matthews, F. S. A. Maw, R. V. F. Mercer, G. A. Miller, M. A. N. Moezuddin, W. H. W. Morris, Edith A. Muirhead, J. de C. Muller, R. B. Munro, W. T. North, H. E. Offord, T. G. Osler, G. H. C. Ovens, J. W. M. Owen, J. S. Parkinson, R. E. J. Pembrey, S. H. B. Platts, G. A. Powell-Tuck, *A. Rashid, G. R. C. Rayner, H. G. Rees, T. G. Richards, A. E. G. Ridgway, D. F. Robb, A. Rothwell, *E. Rudkin, T. J. Ryan, H. B. C. Sandiford, A. J. Sanghani, B. H. Sayed, J. W. V. Sheldon, I. Singh, F. J. Sladen, S. B. Smith, E. J. Somerset, Charlotte M. H. Sparrow, J. E. Stephens, F. Summers, Annie C. Taylor, N. S. Taylor, Enid A. Taylour, D. H. H. Thomas, H. R. Thompson, A. S. Thorley, Greta Traub, H. A. Treble, E. Troensegaard-Hansen, A. R. Walters, E. A. Webb, C. U. Wickham, R. F. Winckworth, Albertine L. Winner.

Diplomas in Ophthalmic Medicine and Surgery were granted, jointly with the Royal College of Physicians, to the following:

W. F. T. Adams, R. H. B. Barrow, A. S. Baxi, M. L. Bhagat, S. C. Biswas, R. Bolton, M. M. D. Chughtai, R. A. Condon, Margaret C. Falconar, S. H. Faulkner, P. Fleming, R. E. Henry, R. Lal, A. ud Din Minhas, I. A. Mohamed, N. K. Munsi, W. J. Robertson, C. B. V. Tait, R. Walkingshaw.

* M.R.C.S. previously granted.

ROYAL COLLEGE OF PHYSICIANS OF LONDON

At a quarterly comitia of the Royal College of Physicians of London, the President, Lord Dawson of Penn, in the chair, the following were elected officers for the ensuing collegiate year: *Censors*, Robert Arthur Young, C.B.E., M.D., Arthur John Hall, M.D., George Frederic Still, M.D., Sir Thomas J. Horder, Bt., K.C.V.O., M.D.; *Treasurer*, Sidney Philip Phillips, M.D.; *Registrar*, Raymond Crawfurd, M.D.; *Harveian Librarian*, T. H. Arnold Chaplin, M.D.; *Assistant Registrar*, Robert Oswald Moon, M.D.

Awards

The Bisset Hawkins Gold Medal was awarded, on the recommendation of the Council, to Dr. T. H. C. Stevenson, C.B.E., for his valuable work when Superintendent of Statistics in the Office of the Registrar-General.

The President announced that on the recommendation of the Science Committee the Leverhulme Scholarships had been awarded to Stanley J. Hartfall, M.D., M.R.C.P., and John Fleming Brock, M.B., M.R.C.P.

The Murchison Scholarship was awarded to G. H. Newns, M.B., of King's College Hospital Medical School.

Harveian Oration

Sir George Newman will deliver the forthcoming Harveian Oration on October 18th at 4 p.m.

Appointments

The following appointments were announced: Sir Thomas Lewis as Harveian Orator, 1933; Sir Humphry Rolleston as FitzPatrick Lecturer, 1933; Dr. C. S. Myers as Bradshaw Lecturer, 1933; Dr. C. R. Box as Lumleian Lecturer, 1933; Dr. C. E. Newman as Goulstonian Lecturer, 1933; Dr. E. A. Carmichael as Oliver-Sharpey Lecturer, 1933; Dr. W. G. Savage as Mitchell Lecturer, 1933; and Professor O. L. V. S. de Wesselow as Croonian Lecturer, 1934.

Dr. James Collier was appointed the College representative on the National Florence Nightingale Memorial Committee.

Membership

The following candidates, having satisfied the Censors' Board, were admitted Members of the College:

Ghulamahmad Niazmohammad Ahmadi, M.B.Bombay, Simon Behrman, L.R.C.P., Harold Walter Benham, M.B.Lond., L.R.C.P., Albert Harold Godwin Burton, M.D.Lond., John Egerton Caughey, M.B.New Zealand, Judson Tyndale Chesterman, L.R.C.P., Jack Dinham Cottrell, M.B.Sydney, Gerald Henry Davy, O.B.E., M.D.Camb., L.R.C.P., Geoffrey Duckworth, L.R.C.P., Theodora Clemens Easterfield, M.B.New Zealand, Sayid Abdel Kader Effat, M.D.Cairo, Richard Huxley Fish, L.R.C.P., Michael Scott Montague Fordham, M.B.Camb., Frank Forman, M.B.Aberd., Philip Rutland Graves, L.R.C.P., Gilbert Steward Hall, M.B.Birm., L.R.C.P., Eric Oates Halliwell, L.R.C.P., Thomas Frederick Hewer, M.D. Bristol, Leonard Haydn Howells, M.B.Lond., L.R.C.P., Alfred Thomas Lock Kingdon, M.B.Lond., L.R.C.P., Julius Libman, M.D.Liverp., L.R.C.P., George Roderick Marcano, M.D.Lond., L.R.C.P., John Henry George Mason, M.B.Lond., L.R.C.P., Walter Lindesay Neustatter, M.B.Lond., L.R.C.P., George Henry Newns, M.B.Lond., William Drew Nicol, M.B.Lond., L.R.C.P., Christopher Robert L'Estrange Orme, L.R.C.P., Gerald Eustace Peacock, L.R.C.P., Norman Swift Plummer, M.B.Lond., L.R.C.P., Edward Tobias Renbom, M.B.Lond., L.R.C.P., David Braham Rosenthal, M.B.Melb., Harley Edward Stevens, M.B.Sydney, Aldwyn Brockway Stokes, L.R.C.P., George Mellor Tickler, L.R.C.P., Henry Ashbourne Treadgold, M.D.Lond., L.R.C.P., Dagmar Florence Curjel Wilson, M.D.Glas., Ian Jeffreys Wood, M.D.Melb.

Licences and Diplomas

Licences to practise physic were granted to 159 successful candidates, and Diplomas in Ophthalmic Medicine and Surgery to nineteen successful candidates, jointly with the Royal College of Surgeons. (The list of successful candidates is published in the report of the meeting of the Royal College of Surgeons in this issue.)

The following diplomas were also conferred, jointly with the Royal College of Surgeons:

DIPLOMA IN PUBLIC HEALTH.—E. R. Bennion, A. D. Cust, Idris Davies, J. F. Galloway, C. Ive, J. D. Kershaw, S. Kin, M. R. Lakhwarah, Kathleen McC. McKeown, J. Maddison, N. F. Pearson, K. N. Sen, G. McK. Thomas, C. H. Williams.

DIPLOMA IN TROPICAL MEDICINE AND HYGIENE.—S. S. Alam, A. S. Arora, E. F. Duck, P. B. Fernando, W. A. Gomes, Florence R. Hart, Esther C. Johnson, W. A. N. Marrow, N. M. Mian, F. J. O'Meara, C. W. Richardson, Mary McD. Richardson, A. J. Sanghani, W. J. Silva, J. Singh, E. P. Veatch.

DIPLOMA IN PSYCHOLOGICAL MEDICINE.—H. L. Burton, C. C. Davis, S. W. Hardwick, W. V. Harke, W. Hinds, Effie L. Hutton, J. H. O. Roberts, Marjorie E. F. Sanders, R. H. Stanbridge, E. S. Stern, C. A. Sundara Raj, L. S. Torrance.

DIPLOMA IN LARYNGOLOGY AND OTOLOGY.—C. N. L. Cantor, M. A. Carneiro, S. K. Chatterji, W. A. D. Drummond, J. C. McFarland, J. Parry-Evans, E. E. Scharfe, R. R. S. Strang.

BRITISH COLLEGE OF OBSTETRICS AND GYNAECOLOGY

The quarterly meeting of the Council was held in London on July 25th, with the president, Professor W. Blair-Bell, in the chair.

The President reported the deaths of two Foundation Fellows—Professor H. Leith Murray (Liverpool) and Dr. W. D. Macfarlane (Glasgow)—and of one Foundation Member—Dr. A. Remington Hobbs (London)—and resolutions of sympathy were passed. Professor J. Windeyer (Sydney) was admitted to the Foundation Fellowship *in absentia* and Dr. Ivan Young Patrick (Montreal) was admitted to the Foundation Membership *in absentia*.

The President announced that the following candidates had passed the examination for the Membership of the College:

George Herbert Alabaster, William John Hunt Montgomery Beattie, Charles Botterill Baxter, Gladys Helen Dodds, Eric Arthur Gerrard, Alistair Gunn, Thomas Arthur Norman Jeffcoate, Hector Ross MacLennon, Douglas Hamilton McLeod, Chassar Moir, Robert Newton, Charles Ross Stansfield, Norman L. White.

The President reported that a deputation of the Council had discussed with the Standing Committee of the Royal College of Physicians and the Royal College of Surgeons the question of a Diploma in Obstetrics and Gynaecology.

The President informed the Council that it was hoped to open the College House, 58, Queen Anne Street, at the end of October or the first week in November, but full details of the ceremony had not yet been arranged.

The Council decided that the Honorary Fellowship of the College should be conferred upon Sir Robert Jones, Bt., K.B.E., C.B., F.R.C.S., and Professor W. P. Graves, Professor of Obstetrics and Gynaecology in Harvard University.

Dr. John Shields Fairbairn was elected to be the next President of the College, and to take office at the Autumn meeting of the Council. Mr. Eardley Holland was re-elected honorary treasurer and Professor Fletcher Shaw honorary secretary. Mr. A. Leyland Robinson (Liverpool) was elected to fill the casual vacancy on the Council created by the death of Professor Leith Murray.

SOCIETY OF APOTHECARIES OF LONDON

The following candidates have passed in the subjects indicated:

SURGERY.—N. P. Bruce, E. F. David, I. S. Lloyd, T. S. Nicol, L. R. C. Rose.

MEDICINE.—R. N. O'D. Burns, M. Davies, C. H. Fagge, A. E. Glanvill, G. F. C. Harvey, D. Kyle, H. Owen, R. H. Wheeler.

FORENSIC MEDICINE.—F. W. Baskervill, N. P. Bruce, R. N. O'D. Burns, E. Cook, C. H. Fagge, A. E. Hassan, R. H. Wheeler.

MIDWIFERY.—R. N. O'D. Burns, M. B. Chandulal, T. S. Nicol, B. Shapiro, L. Wailer.

The Diploma of the Society has been granted to Messrs. M. Davies, I. S. Lloyd, T. S. Nicol, and L. R. C. Rose.

Medical News

The Medical Research Council has appointed Mr. Ernest Bevin; Dr. C. G. Douglas, F.R.S., and Mr. W. S. Morrison, M.P., to be members of its Industrial Health Research Board in succession to Mr. Arthur Pugh, Professor E. P. Cathcart, F.R.S., and Major A. G. Church, who retire by rota on September 30th.

The fourth international medical post-graduate course of the Tomarkin Foundation will be held at Milan from September 12th to October 2nd. The subjects to be dealt with comprise cardiac diseases, cancer, the hormones, anti-diphtherial vaccination, neurosyphilis, disseminated sclerosis, and poliomyelitis. The speakers include many of the leading authorities on the Continent. Further details may be obtained from the secretary of this Foundation, Casella Postale 128, Locarno, Switzerland.

The forty-fifth international post-graduate course of the medical faculty of Vienna will extend from September 26th to October 8th, and will be largely devoted to therapeutics, including such topics as collapse procedures of the lungs, radium and *x*-ray therapy, and the treatment of diseases of the heart, stomach, liver, gynaecological and obstetrical abnormalities, syphilis, and gonorrhoea. The programme can be obtained from the Dean of the Medical Faculty, The University, Ring des 12 November, Vienna, 1.

The eighth Congress of the International Union against Tuberculosis will be held at The Hague from September 6th to 9th under the presidency of Professor Nolen, when the following subjects will be discussed: (1) Relations between allergy and immunity, introduced by J. Bordet of Brussels, followed by H. Aldershoff of Utrecht, S. Lyle Cummins of Cardiff, J. de Daranyi of Budapest, Debré of Paris, K. A. Jensen of Copenhagen, R. Kimla of Prague, Bruno Lange of Berlin, D. Ottolenghi of Bologna, A. Wallgren of Gothenburg, and W. C. White of New York; (2) Chrysotherapy, introduced by L. Sayé of Barcelona, followed by Burns Amberson of New York, Ameuille of Paris, F. Bocchetti of Rome, L. S. T. Burrell of London, Knud Faber of Copenhagen, Jaquerod of Leysin, W. Neumann of Vienna, R. Renchi of Lwow, G. Schroder of Schomberg, and J. Valtis of Athens; (3) Post-sanatorial assistance, introduced by B. H. Vos (Holland), followed by J. Blanco (Spain), E. Bresky (Prague), Buerger (Breslau), R. Courtois and E. Olbrechts (Brussels), Guimard (Bligny), N. Heitmann (Oslo), E. Morelli (Rome), H. A. Pattison (New York), D. A. Stewart (Canada), and Harley Williams (London).

The fourteenth International Congress of Physiology will be held in Rome from August 29th to September 30th. The inaugural address will be delivered by Professor A. V. Hill, on energy exchanges in muscle and nerve. The subscription is 100 lire.

The American Congress of Physical Therapy will meet at the Hotel New Yorker, in New York City, on September 6th, 7th, 8th, and 9th. The meeting will be held in conjunction with New York medical societies, and the British representative will be Dr. F. Howard Humphris of London.

The second International Congress of Tropical Medicine, which was to have been held at Amsterdam next September, has been indefinitely postponed owing to the present financial conditions.

The annual dinner of the Chartered Society of Massage and Medical Gymnastics will be held at the Connaught Rooms, Great Queen Street, on Thursday, September 22nd, at 7.30 p.m.

The address on tuberculosis schemes from the points of view of the administrator and the clinician, which was originally delivered by Dr. A. S. M. Macgregor, medical officer of health for Glasgow, at a meeting of the Tuberculosis Society of Scotland last year, and published in the *Edinburgh Medical Journal* (vol. xxxix, No. 3, 1932), has been reprinted in pamphlet form. Reference is made in it to the authoritative article entitled "The outlook on tuberculosis," which appeared in the *British Medical Journal* of January 10th, 1931.

At the July meeting of the Central Midwives Board for England and Wales a letter was received from the Under Secretary of State for the Colonies, enclosing a copy of an Act passed by the Legislature of Barbados for the registration and better training of midwives in the island, and stating that he would be glad to receive any observations which the Board might wish to offer. It was decided to reply that the Board had no observations to make on the Act, but that if the General Nursing Council of Barbados wished to enter into arrangements with the Board for the purpose of reciprocal registration of midwives in England and in Barbados the Council should transmit to the Board a draft copy of the rules to be framed by it, under the Act, in order that it can be seen whether the standard of training and examination in Barbados is equivalent to that in England. The application of the London County Council that twenty-two hospitals should be approved under Rule E.26 was granted. Approval as lecturer was granted to Dr. Francis John Hector, Bristol General Hospital. The Board recorded its deep sympathy with the relatives of the late Dr. Herbert Leith Murray and its appreciation of the valuable services rendered by him as an examiner at the Manchester and Liverpool Centre.

The London County Council has affixed a glazed-ware tablet on No. 3, Manchester Square, W., to commemorate the residence there of the eminent neurologist John Hughlings Jackson.

The annual report for 1931 of the West End Hospital for Nervous Diseases states that 522 patients were admitted during the year to the in-patient department in Regent's Park, and 41,256 out-patient attendances were made at the department in Welbeck Street. The provision of facilities for patients in the men's and women's wards to engage in handicrafts under trained instruction has proved so satisfactory that it has been extended also to the children's ward. The hospital's post-graduate courses have been continued during the year, and facilities for attendance at the general practice of the hospital are being developed. The annual subscriptions received were in excess of those for the year 1930, and, by the exercise of the most stringent economy, expenditure was reduced under practically every heading.

The executors and trustees of the late Mr. Bernhard Baron are making a gift of £5,000 to the London Jewish Hospital, to be received over a period of five years. This gift will form the nucleus of a fund of £120,000, which has been opened for the purpose of carrying out an extension of the hospital, including a separate nurses' home.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to **The EDITOR, British Medical Journal, British Medical Association House, Tavistock Square, W.C.1.**

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

Authors desiring REPRINTS of their articles published in the *British Medical Journal* must communicate with the Financial Secretary and Business Manager, British Medical Association House, Tavistock Square, W.C.1, on receipt of proofs.

All communications with reference to ADVERTISEMENTS, as well as orders for copies of the *Journal*, should be addressed to the Financial Secretary and Business Manager.

The **TELEPHONE NUMBERS** of the British Medical Association and the *British Medical Journal* are *MUSEUM* 9861, 9862, 9863, and 9864 (internal exchange, four lines).

The **TELEGRAPHIC ADDRESSES** are:
EDITOR OF THE *BRITISH MEDICAL JOURNAL*, *Aitiology Westcent, London.*
FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate Westcent, London.*
MEDICAL SECRETARY, *Medisecra Westcent, London.*

The address of the Irish Office of the British Medical Association is 18, Kildare Street, Dublin (telegrams: *Bacillus, Dublin*; telephone: 62550 Dublin), and of the Scottish Office, 7, Drumsheugh Gardens, Edinburgh (telegrams: *Associate, Edinburgh*; telephone: 24361 Edinburgh).

QUERIES AND ANSWERS

Injection of Hydrocele

Mr. SYDNEY RUMBOLL (Leeds) writes: "H. C." wishes to know of an effective yet safe substance for the injection of hydrocele. When I was a student in Edinburgh in the early 'eighties I saw Mr. Joseph Bell often inject a hydrocele with iodine. The following is the description in his *Manual of Surgical Operations*. "The surgeon enters a trocar and cannula about an eighth of an inch in diameter into the distended cavity of the tunica vaginalis near the fundus of the swelling. When it is evident the instrument is fairly entered, and not till then, the trocar is withdrawn and the fluid allowed completely to drain off. When it ceases to flow the surgeon places his forefinger over the end of the cannula to prevent the exchange of air till he fits into its orifice a suitable syringe containing two drachms of tincture of iodine, made according to the *Edinburgh Pharmacopoeia* —the tincture of the *British Pharmacopoeia* is not sufficiently strong. Having injected this cautiously into the cavity the cannula is withdrawn, and the surgeon, seizing the now flaccid scrotum in his right hand, gives it a thorough shake, so as to spread the iodine over as much as possible of the inside wall." I may say I have personally used this method of injection for over forty years with great benefit and satisfaction to my patients.

Dr. ANDREW T. ROSS (Cornwall) writes: See De Lisle Gray's article (*British Medical Journal*, April 5th, 1930, p. 649). Take equal parts of alcohol, carbolic acid, and glycerin, and inject about 4 c.cm. of mixture after emptying sac. I have not found it fail.

*** In his article on non-operative treatment of chronic hydrocele, printed this week at page 240, Mr. Morton Whitby recommends injection of iodized phenol.

Income Tax

Benefit of Occupation of Premises

"Resident" is medical officer of a local dispensary at a salary of £100 a year, "and house free of rent and rates." The local inspector claims that he is chargeable on the amount of the rates on the ground that he is the occupier of the premises, and quotes the case of Lady Miller.

*** If "Resident" is correctly regarded as the statutory occupier of the premises, then he is personally liable for the rates, and the payment thereof by the dispensary on his behalf would constitute income liable to tax. But we are very doubtful whether the circumstances justify the authorities in regarding him as the "occupier." In the leading case of Tennant *v.* Smith, Mr. Tennant was a bank manager residing on premises used for the purposes of the bank, and he resided there as an employee of the bank and for the purpose of carrying out his duties there. Lady Miller was a widow entitled to rent-free occupation of lands under her husband's will, and any rights the trustees had with regard

to the house were merely those of access and inspection. If the dispensary is (as we suppose) situated at the premises where our correspondent resides we consider that the facts are analogous to those in the case of Tennant *v.* Smith and not to those of the newer case, which has modified the application of the old rule in certain circumstances.

Practice Sold—Car Depreciation

"M. N." bought a car in 1928 for £450, and has never claimed depreciation. He sold his practice as from December 31st, 1931; can he claim any allowance in respect of the depreciation of the car?

⁂ Strictly the depreciation allowance should be claimed when the income tax return is made. There is, however, a provision in the Income Tax Acts under which an "error or mistake" can be redressed on the basis of a written application to the authorities, and we have understood that omissions to claim depreciation have been admitted as falling within the category of "errors or mistakes." We therefore recommend "M. N." to apply to his inspector of taxes for repayment in respect of depreciation allowances for past years on the ground of "error or mistake." The allowances to be claimed—assuming that no restriction for private use applies—are as follows:

1929–30, £450 at 20 per cent. = £90.
1930–1, £360 at 20 per cent. = £72.
Three-quarters of 1931–2, three-quarters of £288 at 20 per cent. = £44.

Request for Accounts

"A. B." states that although the inspector of taxes has been supplied with a "detailed statement of the income and expenditure" he now asks for "a certified copy of the Accounts and Reports for the last financial year."

⁂ The request is apparently a formal one, and may have been sent out as a matter of routine by some official who was not aware that a detailed statement had already been supplied with the statutory return. We suggest that "A. B." write explaining to the inspector that the account for which he is apparently asking has already been forwarded with the statutory return, and will, no doubt, be found therewith.

LETTERS, NOTES, ETC.

Aluminium and Health

Dr. E. H. RINK (London, N.W.3) writes: I should like to draw attention to two cases which were known to me personally. The first was a man of 30 years of age. He had suffered for eight years from repeated attacks of abdominal pain, with nausea, flatulence, furred tongue, and constipation, sometimes with diarrhoea. There was tenesmus, and a little mucus in the stools. Other symptoms were slight pruritus all over the body, lack of energy, and brittleness of the nails. The condition had been previously diagnosed as chronic appendicitis on one occasion, and on another, cholecystitis. The patient had been an excellent athlete, but had had to give up his running owing to these symptoms. The other patient was a man of 55. He had suffered from indigestion for twenty years, with attacks of colicky pain, alternating constipation and diarrhoea, the faeces being light in colour and containing mucus. The appetite was varying, and during the attacks there was retching, nausea, thick furring of the tongue, severe flatulence, and a bad taste in the mouth. He had formerly been diagnosed as a case of colitis mucosa, but treatment on these lines had been without result. Both these patients were treated in 1929 on the lines suggested by Dr. Leo Spira in his articles—that is to say: (1) cutting off the source of poison, by scrapping all aluminium cooking utensils, and substituting natural mineral water for tap-water; (2) absorption of toxins by charcoal. In each case there was a striking improvement within a fortnight, and both patients have been absolutely fit ever since.

Amidopyrin in Measles

Dr. DOOLEY (Ilford, Essex) writes: In the *Journal* of June 18th you published a letter from Dr. Maurice O'Regan relating to the treatment of measles with amidopyrin. I would like to add that I have also been impressed by the therapeutic use of this drug, which I have employed regularly for the past two years. This year, however, the epidemic in this district was of a mild type, and children in whom no drug treatment was employed appeared to have recovered just as quickly and completely as those taking amidopyrin. I do not think that it can be asserted that amidopyrin is likely to prove a specific for measles. My own opinion is that any of the antipyretic drugs calculated to have a general sedative effect are likely to give equally gratifying results. In assessing the value of treatment of this nature, the prevailing social conditions must be regarded as of chief importance.

Intravenous Vaccine Therapy

"M.B." writes: I was interested to read in the *Epitome* of May 14th, an abstract from *Bull. Soc. Franç. de Derm. et de Syph.* J. Gaté, P. Cuilleret, and C. E. Boyer gave by accident an intravenous injection of gonococcal vaccine with striking results in a case of orchitis. It is a point not to be lightly passed over, as in my opinion too little is known of intravenous vaccine therapy. We have a feeling of awe whenever we consider pushing vaccines into a vein. We do not use this route sufficiently. I have seen and obtained striking results with intravenous T.A.B. vaccine in appropriate dosages in typhoid fever. The injection is practically specific for the disease. The temperature falls almost immediately after a rigor, the patient feels very comfortable an hour afterwards, and convalescence sets in forthwith. This sounds almost like a magic art, but I trust that if I myself am ever afflicted with typhoid I shall not be denied the intravenous vaccine. Occasionally one finds a slight rise of temperature again a few days later, but a second smaller dose of vaccine intravenously effects the requisite result. I have never seen a death or a complication occur with this method, though necessarily I have not been able to obtain many cases. An interesting point in the excerpt is the extreme shock that was caused by the accidental injection of gonococcal vaccine. This was considered to be an anaphylactic phenomenon ensuing on previous hypodermic injections of vaccine. I feel that only part of the shock was due to anaphylaxis, because in the typhoid cases mentioned there was a marked rigor, but not so profound as that obtained after the gonococcal vaccine. Anaphylactic shock was probably added to the disturbance normally obtaining with intravenous vaccine treatment. I am satisfied that with typhoid vaccine intravenously, typhoid fever becomes a minor illness. Further, I can see no reason why this method of therapy cannot be applied to other diseases, especially similar septicaemic states.

Anaphylaxis: A Personal Experience

Dr. CHARLES S. THOMSON (Belfast) writes: Shortly after the war I arranged with a friend, as surgeon, to have a lipoma removed from the left side of my forehead. My friend died two or three years ago, and I thought that it might be of interest if I described my personal sensations during an experience which probably caused him more perturbation than myself. I lay down on the operating table of a nursing home and a local anaesthetic was injected *secundum artem*. In about sixty seconds I felt my heart give a distinct bump, and this was followed by pain in the occipital region. I then developed crowing inspiration. I knew that this was anaphylaxis, and I felt worried for the doctor and nurse. I asked the nurse to give me some brandy—a drink I was a stranger to. I brought the brandy up at once. My legs began to lose power, but I raised myself on my elbow to try and "get my breath." The poor nurse kept quiet, but her face turned grey. I told her I would be all right in a brace of shakes, and not to worry. The occipital pain gradually lessened—it had been very painful indeed—and by degrees the crowing inspiration eased. My legs became warm, and I cheered up the audience of two and encouraged them to set about the operation. All my life I have respected the surgeon for the strain he must feel in doing his job. I never asked what I looked like during my attack—preferring to change the subject to something more pleasant.

Messrs. Evans Sons Lescher and Webb Ltd., have issued an illustrated pamphlet describing certain modern biological and pharmaceutical products manufactured throughout at their Biological Institute, Higher Runcorn, Cheshire. Members of the medical profession who have not received copies may obtain them free of charge from 56, Hanover Street, Liverpool.

Vacancies

Notifications of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 37, 38, 39, 42, and 43 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 40 and 41.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 112.

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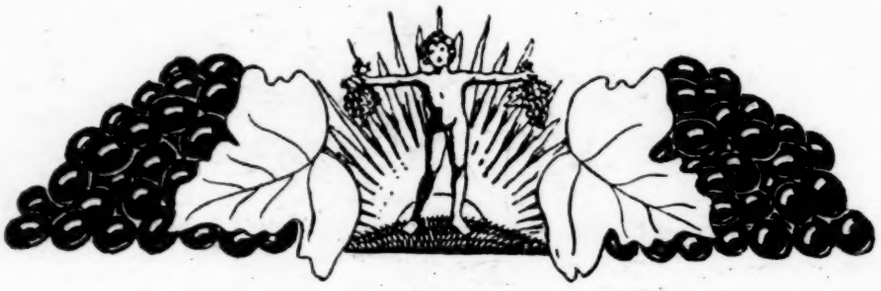

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A distinguished obstetric surgeon has laid it down that "constipation plays a leading part among the so-called minor ailments of pregnancy." The same authority advises that "simple methods which are physiological and harmless" should be adopted in order to secure two or three easy movements a day, these methods being persisted in until a regular habit is established.

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